CFLCC (US Army) Training Circular 21-305-4.1
CFLCC (USAF) Pamphlet 91-208(I)
CFLCC (USN) Instruction 5101.3A

Coalition Forces Land Component Command (CFLCC)
Interservice Publication (IP):
Safety

Tactics, Techniques and Procedures (TTPs), Program of Instruction (POI), and Crew/Battle Drills for the High Mobility Multipurpose Wheeled Vehicle (HMMWV) Egress Assistance Trainer (HEAT)

Headquarters
Coalition Forces Land Component Command (CFLCC)
Camp Arifjan, Kuwait
APO AE 09306
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(Preface and subsequent CFLCC TC 21-305-4.1/Pam 91-208(I)/INST 5101.3A text continued on next page.)

PREFACE

The focus of any Safety Program is *Mission Assurance*. And, the focus of this Training Circular (TC) is the success of those charged with the stewardship of training programs and operations inherent to mission planning and execution involving the HMMWV. While this document is the third prepared that is applicable to all Service components within CFLCC – as a *"purple"*, or *"Interservice"* document – it is the *first-of-its-kind* that provides the TTPs and POI for the touchstone program specifically designed to save the lives of those who operate the HMMWV, and as a direct result of accident history and experience in the combat theater, for the four major Service components under a single cover. In a not insignificant way, it fulfills a part of the mandate issued by the Chairman of the Joint Chiefs of Staff for *joint-ness* in our operations – including our doctrine. It is important to note (that) the United States Air Force (USAF) is still regulated under AF Instruction (AFI) 91-series publications; and the Navy and Marine Corps are still regulated under (the) Office of the Chief of Naval Operations (OPNAV) Instruction (INST – OPNAVINST) 3700- and 5100-series, and other governing Naval Instructions; and in no way is this informational pamphlet to be take procedural precedence over AF or Naval protocol.

As of this writing, nearly 250 Operation Iraqi Freedom (OIF) soldiers have been severely injured in rollovers since the beginning of the campaign. Of that 250, over half were rollover fatalities. Nearly three score have died in up-armored HMMWVs; and of those, more than a dozen were by drowning.

To that end – the single largest goal of this POI is that of teaching crewmembers the proper procedures to be followed to survive the rollover and egress from an inverted HMMWV. And, the key objective which underpins this goal: To learn how to avoid getting into a rollover mishap in the first place by emphasizing teamwork and developing muscle memory through crew/battle drills. Conducting this training under controlled conditions will allow crewmembers to gain experience in the proper egress procedures. This practice is necessary for the Soldiers, Sailors, Airmen, and Marines of this command to achieve self-control and overcome the fear and panic that is natural following the catastrophic event that led to the vehicle inverting in the first place. A recent article printed in an aviation industry publication stated that a person who is "egress trained" stands a 250% greater chance of survival than an untrained occupant when faced with a water egress emergency. Since the foundation of this TC is traceable to the POI for water egress trainers used by aircraft flightcrews, this sobering statistic becomes a reasonable expectation for the HEAT. This TC yields three key advantages for the reader: First, is its *cogency*. If there is guidance to be had in administering training in the HEAT, then that guidance is either discussed herein, or the resource is clearly stated in its proper context. This provides a veritable *one-stop-shopping cookbook* for how to do this business of training in the HEAT. Secondly, is its *cross-referencing*. Parts of the TC are stitched together through cross-referencing, to give the reader the best chance of fully grasping the concept(s) being researched. Finally, is the *coaching* timber that comes to the reader through the text and pages. If there's a common observation of those who have read this TC, it's the impression that they've had a conversation with the author, and were left with a rich understanding of the task or concept about which they were reading. In short, the HEAT will lead those who have experienced it first-hand to develop high confidence in their ability to respond automatically to this inverted emergency, whether they are under water or under fire.

The effective use of this TC by the reader will be evident in the months and years ahead: Dog-eared and smudged pages, margin notes, and a perpetual curl to the document from having been toted along in a kit bag or uniform pocket. That having been said –

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Headquarters
Coalition Forces Land Component Command
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Safety

TACTICS, TECHNIQUES AND PROCEDURES (TTPs), PROGRAM OF INSTRUCTION (POI), AND CREW/BATTLE DRILLS FOR THE HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV) EGRESS ASSISTANCE TRAINER (HEAT)

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History. This printing publishes the initial version/edition of the (Interservice) Coalition Forces Land Component Command (CFLCC) (US Army) TC 21-305-4.1/CFLCC (USAF) Pamphlet (Pam) 91-208(I)/CFLCC (USN) Instruction (INST) 5101.3A (Tactics, Techniques and Procedures [TTPs], Program of Instruction [POI], and Crew/Battle Drills for the High Mobility Multipurpose Wheeled Vehicle [HMMWV] Egress Assistance Trainer [HEAT]) under authority of Department of the Army (DA) Pam (DA Pam) 25-40 (Army Publishing: Action Officers Guide), AFI 33-360 Volume (V)1 (Publications Management Program), and OPNAVINST 5000.48 (OPNAV Administrative Manual). The numbers assigned to this publication were selected by: For the Army, adapting the basic publication number of the underpinning TC on the same subject as described in DA Pam 25-40; for the AF, using the succeeding publication number in sequential order to the underpinning AFI on the same subject, as described in AFI 33-360V1 (the parenthetical "I" denotes an *Interservice* publication, per AFI 33-360V1, paragraph [para.] 3.12.1.); and for the USN and US Marine Corps (USMC), using the program document prefix number (5101) as the prefix, and a decimal suffix (3) denoting Operations and Readiness, as described in Secretary of the Navy [SECNAV] INST 5210.11 [Standard Subject

* New TC/Pam/INST – initial publication.

Identification Code Manual], page 12). This TC consolidates much of the outstanding unclassified CFLCC guidance relative to wheeled vehicle rollover and egress training; and establishes the TTPs for use of the HEAT for those assigned, attached, Operationally-Controlled (OPCON'd), or simply operating within the CFLCC Area of Responsibility (AOR). And, in so doing, carries out the tenets of Executive Order (EO) 12861 (Elimination of One-Half of Executive Branch Internal Regulations); and Department of Defense (DoD) Instructions (DODIs) 6055.1 (DoD Safety and Occupational Health [SOH] Programs) (para. 2.2), and 6055.4 (DoD Traffic Safety Program). It is largely formatted to a DA Pam 25-40 standard, with minor exceptions to accommodate the nuances of an Interservice publication, and to enhance readability – taking advantage of the latitude afforded in AFI 33-360V1, para. 2.3.1 for a relaxed formatting of pamphlets. This document reflects decades of evolution in changes to public law, DoD, DA-level, Department of the AF-level, Department of the Navy (DON)-level policies; Findings and Recommendations from Service accidents; those relevant accident lessons learned from other agencies and Coalition forces; and unincorporated unclassified CFLCC policy letters and implementing memorandums.

Note: Title references to this publication by type or category are typically noted as a *TC*. For purposes of expedient reference **only to this publication** – since it is an Interservice publication – the generalized term *TC* also implies *Instruction* (or *INST*), and Pamphlet (or *Pam*).

Summary. This document establishes the TTPs and POI, and delineates the Crew/Battle drills for use of the HEAT – an integral component of the larger vehicle operator selection, training and testing processes. Operator's training – whether from behind the wheel, or manning the turret – is a component of the larger Safety program. The Safety program, in turn, supports the Readiness and Operations components of our Armed Forces and Coalition partners as outlined in, and required by: Army Regulations (ARs) 385-10 (The Army Safety Program), and 385-95 (Army Aviation Accident Prevention); Air Force Policy Directives (AFPDs) 91-2 (Safety Programs), 91-3 (Occupational Safety and Health), 90-9 (Operational Risk Management), AFIs 91-202 (The US Air Force Mishap Prevention Program), 91-207 (The US Air Force Traffic Safety Program), 91-301 (Air Force Occupational and Environmental Safety, Fire Protection, and Health [AFOSH] Program), 91-302 (Air Force Occupational and Environmental Safety, Fire Protection, and Health [AFOSH] Standards), and 90-901 (Operational Risk Management); Air Force Occupational and Environmental Safety, Fire Protection, and Health Standard(s) (AFOSHSTD) 91-501 (Air Force Consolidated Occupational Safety Standard); Field Manual (FM) 3-100.12/Air Force Tactics, Techniques and Procedures (AFTTP) 3-2.34(I) (Risk Management); FM 100-14 (Risk Management); Air Force Pamphlet (AFPAM) 90-902 (Operational Risk Management [ORM] Guidelines and Tools); OPNAVINSTs 3750.6 (Naval Aviation Safety Program), and 3500.39 (Operational Risk Management [ORM]); Marine Corps Orders (MCOs) 5100.29 (Marine Corps Safety Program), 3500.27 (Operational Risk Management), 5100.19 (Marine Corps Traffic Safety Program [Drive Safely]), and 5110.1 (Motor Vehicle Traffic and Supervision); and 29 Code of Federal Regulations (CFR) 1960.1(a), and 1960.8(c). Although this TC may make reference to other publications, it does not repeat (these) requirements noted elsewhere unless specific highlighting or emphasis of requirements for document clarity was warranted. In describing some processes that are detailed across a variety of publications, these processes have been consolidated herein for cogency. And, in many cases, (at least) the (suggested) methodology of implementation of these other requirements has been delineated. Within the umbrella of establishing the TTPs and POI for the HEAT, several policies and procedures – and the instructions for their administration – are established herein.

A Note About Mandates Versus Guidance in This TC. When the verbs *shall*, *will*, or *must* (or a verb used in the imperative mood [for example, *do*]) appear in this TC, they typically reflect a conveyance of another existing published requirement in a Regulation, Pamphlet, Directive, Instruction, Implementing Memorandum, Policy Letter, or some other official mandate. Mandatory provisions throughout this TC are typically suffixed with parenthetical reference to the parent text (for example, *"reference AR 385-95, para. 3-3a."*). The verb *should* is used to strongly recommend an action. The verbs *may* or *can* suggest an action, leaving the choice to the reader (reference DA Pam 25-40, para. 2-4). As they relate to AF and Naval organizations, pamphlets (such as this one) are largely *"how to"* documents – with compliance expected, but not mandatory (reference AFI 33-360V1, para. 2.3.1 for AF; and OPNAVINST 3750.6, Forward, for Naval assets); unless the specific clause is otherwise mandated in an underpinning document in/by which compliance is compulsory.

Note: For purposes of this Instruction, and unless otherwise distinguished, *"Naval"* infers provisions for both Navy and Marine Corps (reference OPNAVINST 3750.6, Forward).

Applicability. This TC applies to all Soldiers, Sailors, Airmen, Marines, civilians, technicians, and contractors assigned, attached, OPCON'd, or performing HMMWV- or HEAT-related contracted services for/to CFLCC or those organizations operating within the CFLCC AOR – to include elements transiting the CFLCC AOR.

Proponent and exception authority. The proponent/executive agent of this TC is the CFLCC Safety Director, serving as a principal staff advisor to the CFLCC Commanding General (CG) – and key CFLCC staff office(r)s – on matters of Safety. The proponent has the authority to adjudicate, interpret, and approve exceptions to this TC that are consistent with controlling law(s) and regulation(s).

(Army) Management Control Process. This TC is not subject to the requirements of AR 11-2 (Management Control). However, it does contain management control provisions and suggestions for which checklists may be appropriate in conducting Management Control reviews; which were published under (a) separate cover. As a method of management control evaluation at the CFLCC-level, the checklist in AR 385-95, appendix D; or in a format suggested in OPNAVINST 13260.1 (Air Readiness/Effectiveness Measuring [AIREM] Program), may be used. Management Control Evaluations below the CFLCC-level are satisfied in accordance with (IAW) paragraph 1-6c(2) of this TC, and separate evaluation is not required.

Supplementation. Supplementation of this TC and establishment of command and local forms is prohibited without prior approval from the proponent. The proponent may (also) authorize the generation and distribution of informal and unofficial addenda to this TC that follow the basic theme of, and tastefully and favorably reflect the command commitment to, HMMWV, HEAT, and general vehicle Safety (such as student handouts compiled for safety meetings, or worksheets that aid in the filling-out of mishap forms). Such addenda are not to be incorporated in this TC, and are not to be catalogued as official CFLCC publications.

Suggested Improvements. Users are invited to send comments or suggested changes on a DA Form 2028 (Recommended Changes to Publications and Blank Forms), an AF Form 847 (Recommendation for Changes of Publication), or any similar suitable format to: CFLCC Safety Office (ATTN: CFLCC TC 21-305-4.1), Camp Arifjan, Kuwait, APO AE 09306.

Army Performance Improvement Criteria (APIC), USAF, and Naval Performance Management. Periodic review of this TC should be included in the APIC, or like voluntary programs as discussed in AR 5-1 (Total Army Quality Management), AR 5-4 (Department of the Army Productivity Improvement Program), AR 5-24 (Management Improvement and Productivity Enhancement in the Department of the Army), AFI 90-1102 (Performance Management), and like programs, such as OPNAVINST 5200.25 (CNO Management Control Program).

Impact on the (Army) Unit Manning System. This TC does not contain policies that affect the (Army) Unit Manning System.

Restrictions. Approved for public release; distribution unlimited. Local reproduction is authorized and encouraged.

Distribution. A-E (reference DA Pam 25-40, para. 6-3a); F (reference AFI 33-360V1, para. 3.43.3); E, F (reference OPNAVINST 5215.17 [Navy Directives Issuance System], chapter 2); and one for each affected organization in the CFLCC AOR.

Contents (listed by paragraph and page number)

(Chapter 1 and subsequent text continued on next page.)

Chapter 1
General

1-1. **Purpose**.

a. The goal of the HEAT is effectively summarized in the *Preface* to this TC and as further clarified below. It is designed to instill the training necessary to first avoid a roller, then to survive the rollover and successfully egress from an inverted vehicle by emphasizing teamwork and developing muscle memory through crew/battle drills (see figure 1-1). A better perspective may be in clarifying what the HEAT is ***not***: It is *not* designed to show how easy it is to become disoriented.

Figure 1-1. The HEAT instills the training necessary to survive a rollover and successfully egress from an inverted vehicle.

b. HEAT training is one of the final steps in an overall Vehicle Safety Training Program as described in paragraph 4-3a. The scenarios inherent to training in the device presume that an accident has occurred or is in the process of occurring, and the HMMWV crew must now respond accordingly. The total vehicle training program incorporates:

(1) Academic training in Risk Management and accident avoidance;

(2) drivers training and rules of the road for the particular country or theater of operations;

(3) hands-on training with the specific equipment in/with which the crew will operate. This segment of the vehicle safety training program is the point at which the crewmember becomes licensed on that particular piece of equipment; and

(4) the Safety Driver Training, in which the driver learns to avoid accidents in a multi-scenario environment of braking, returning to the roadway, serpentine maneuvers, and high-speed lane changes. While Safe Driver Training is not a prerequisite for the HEAT, it is a logical sequence for learning (about), avoiding and recovering from near-accidents in the Vehicle Safety Training Program sequence.

c. This TC formally establishes the TTPs and POI for the HEAT as used in the CFLCC AOR (AF, Naval and Army); and covers all HEAT operations. It is designed as an integral component of the larger vehicle operator selection, training and testing process as noted above. Operator's training – whether from behind the wheel, or manning the turret – is a component of the larger Safety program. And, as mentioned earlier, the Safety program supports the Readiness and Operations components of our Armed Forces and Coalition partners. The main thrust of the TTPs for the HEAT is to avert accidents and conserve manpower and equipment without compromising the fulfillment of the CFLCC mission. This TC outlines personnel responsibilities, and provides implementation instructions, goals and methods CFLCC will use to monitor the overall success of the HEAT device and related programs.

(1) In communicating these instructions and methods, some vagueness or ambiguities are intentionally included to give the widest latitude to the local Commander for successful program implementation. In cases of differing opinions as to the appropriateness of a method for implementation, the benefit of the doubt belongs to the implementing local Commander. In more protracted disagreements, the proponent of this TC (the CFLCC Safety Director, as an agent of the CFLCC CG) shall serve as the final authority, consistent with controlling law(s) and regulation(s).

Note: For purposes of this TC, and unless otherwise distinguished, the terms *Commander* and *Reporting Custodian* are synonymous.

d. In addition to rollover prevention training, and the TTPs necessary to successfully survive the event and egress, the full potential of the HEAT has yet to be realized. Much as aircraft simulators are often used as technology testbeds, and all simulators have shown themselves to be excellent tactics and techniques demonstrators, the HEAT will likely find itself in good company with other simulators and training devices of its type.

e. As new materiel is developed for the HMMWV, those who manage each device – and the program at large – shall ensure parity between the HEAT and the HMMWV fleet throughout the CFLCC AOR. While equipping and outfitting the HEAT should not come at the expense of a HMMWV, it is important to introduce new equipment in the training environment to engrain its use in the crew/battle drills that will result in a positive habit transfer to the operational environment through correct muscle memory.

f. This chapter provides introduction of, background to, and the underlying philosophy of the CFLCC HEAT TTPs and POI; and details the responsibilities relevant thereto.

1-2. **References**. Required and related publications are listed in appendix A. Prescribed and referenced forms are also listed in appendix A. Many references throughout this TC appear in color: Blue for AF publications/references, green for Army publications/references, gray for Navy or Marine Corps publications/references, and purple for those publications/references typical to two or more services/components. Text in red is as described in paragraph 4-5e and 4-6. This colorization of the document was only added to enhance readability, and no comprehension of the document is sacrificed if printed/viewed in black-and-white. Each reference cited throughout carries its own applicability, and no promulgation is implied between Services or Components where the cited document itself does not indicate applicability.

1-3. **Explanation of Abbreviations and Terms**. Abbreviations and Special Terms used in this TC are listed in the Glossary. Also see abbreviations and special terms listed in the Glossary of AR 385-series; AFPD 91-2; OPNAVINST 3700-series and 5100-series; and 29 CFR 1910 (Occupational Safety and Health Standards).

1-4. **Scope**. This TC is applicable to all HMMWV and HEAT-related operations within, or supported by, CFLCC. A copy of this TC shall be maintained by each Detachment/Company/Troop/Flight-sized element (those traceable to a Unit Identification Code [UIC]) and larger operating in, or transiting through, the CFLCC AOR who use, or expect to use, the HEAT.

1-5. **HEAT Safety Philosophy**. Safety, as a discipline, is the embodiment of the art and science dedicated to mission execution with the highest return on investment, at an acceptable level of risk for the stated purpose of *Mission Assurance*.

a. Mission accomplishment with an acceptable level of risk is the main thrust of the HEAT. A successful accident prevention program is a byproduct of command supervision – each inherent to the purpose behind the HEAT. Effective command supervision includes attention to proper procedures in sufficient detail to prevent the occurrence of accidents. Nothing in the planning stage of a military mission can be left to chance, nor can proper performance on the part of personnel be assumed. There are few, if any, accidents within the CFLCC AOR resulting from new or exotic causes – particularly when it comes to HMMWV operations. A successful accident prevention program can be accomplished through proper training, job performance, and supervision.

b. Many wheeled vehicle accidents can be linked either to individuals performing tasks beyond their proficiency level, or a tendency toward complacency during routine operations. Training programs must be realistic, meaningful, and used to identify and expand the capabilities of each individual and organization. At the same time, training must be conducted in a safety-conscious environment in which all participants *think safety*, follow prescribed procedures, are alert to potential unsafe acts, and operate within their own limitations and capabilities, and that of their equipment.

c. Any individual who knowingly violates regulations or established safety procedures that may contribute to an accident, incident or mishap shall be subject to prompt disciplinary actions.

(Paragraph 1-6 and subsequent text continued on next page.)

1-6. **Duties and Responsibilities** (in addition to the several other requirements).

Note: Responsibilities delineated herein for parties above/outside the scope of the CFLCC CG are not themselves directive in nature – merely conveyances of requirements in other publications noted throughout – and are cited to show how entire Service Safety processes are connected from the individual to each successive level of military hierarchy.

a. **DCG, CFLCC**, ensures adequate resources are allocated to support an effective CFLCC HEAT program as outlined in this TC.

b. **Operations Officer (C-3), CFLCC**, has the staff responsibility for supervising the CFLCC HEAT Training Program. This specifically entails establishing, coordinating, and fielding the HEAT program to provide accident prevention promeasures and countermeasures for all wheeled vehicle operations, including maintenance of this TC and its related implementing guidance. Most of the functions inherent to this paragraph are performed by the Area Support Group (ASG)-Kuwait S-3 (Operations Officer) on behalf of the CFLCC C-3.

c. The **CFLCC Safety Director** shall (on behalf of the CFLCC C-3, and reporting to the CFLCC DCG and CG):

(1) Recommend and implement an effective CFLCC HEAT Program; related laws, regulations, etc.; and

(2) review accident experience trends and provide an analysis to appropriate agencies/organizations as it pertains to the HMMWV and HEAT.

Note: For purposes of administering the collective CFLCC Safety Program, references are made synonymously throughout this TC to the *CFLCC Safety Office(r)*, the *CFLCC Safety Director*, and the *CFLCC SOH Office(r)*.

d. **Commanders** shall:

(1) Complete a risk assessment IAW FMs 100-14 or 3-100.12, AFPD 90-9, AFI 90-901, AFPAM 90-902, OPNAVINST 3500.39, or MCO 3500.27, prior to conducting HEAT training with their unit(s);

(2) determine which participants shall attend the Intermediate and Advanced HEAT phases (see table 4-1), and ensure the HEAT Training Participant Screening Sheet (appendix B) is completed for each participant;

Note: For purposes of this TC, and unless otherwise distinguished, the terms *HEAT Training participant*, and *crewmember* are synonymous

(3) notify those in their charge of the hazards associated with training in the HEAT (see chapter 3);

(4) ensure personnel attending the HEAT are properly equipped to do so, including protective eyewear (see paragraphs 2-3 and 2-4);

(5) encourage personnel selected to attend the HEAT to accomplish any directed or recommended prerequisite training in paragraph 2-5a;

(6) ensure personnel understand the Training Time Out (TTO) and Drop On Request (DOR) policies prior to undertaking training in the HEAT, and appendix B is completed for each HEAT Training participant before undertaking training;

(7) ensure any injuries or mishaps occurring in the HEAT device are reported IAW appendices C and D; and

(8) participate in feedback and comments on the HEAT using appendix E.

e. **Commanders, Master Driver Trainers, and supervisors** of those attending the HEAT shall:

(1) Read and be familiar with this POI;

(2) review the Risk Management Worksheet developed for the HEAT, and make any local expansions necessary for compatibility with the Unit Mission Essential Task List (METL) (see appendix F);

(3) ensure the Preventive Maintenance Check Services (PMCS) and prescribed maintenance have been performed (see appendix G);

(4) ensure parity between the HEAT and the HMMWV operational fleet as new equipment for the HMMWV is fielded (e.g., a Gunner's Restraint Harness – see paragraph 1-1e).

(5) ensure evidence of motion discomfort is policed IAW paragraph 3-2; and

(6) ensure completion of training records IAW paragraph 3-12.

f. The **Unit Master Driver Trainer** will be the functional Officer in Charge (OIC)/Noncommissioned OIC (NCOIC), working with technical input from the (other) uniformed members and/or contractors on site.

Chapter 2

HEAT Data and Training Requirements. This chapter delineates the basic and up-armored HMMWV characteristics, the required training equipment and aids, provides an overview of the training, and establishes priorities for use of the device.

2-1. **M1114 HMMWV Data**:

a. Curb weight: 9,800 pounds (lbs.)/4,447 kilograms (kgs).

b. Payload: 2,300 lbs./1,043 kgs.

c. Gross Weight: 12,100 lbs./5,489 kgs.

d. Armored HMMWV door weight: 240 lbs./109 kgs.

e. Max towed load: 4,200 lbs./3,175 kgs.

f. Maximum safe speed depends on surface conditions. Never exceed posted speeds.

g. Critical HMMWV angles:

(1) Technical Manual (TM) 9-2320-280-10 (Operator's Manual for M998 through M1035), para. 1-9c indicates a fully-loaded M998 through M1038 HMMWV will traverse a side-slope of up to 22°. And, according to TM 9-2320-387-10 (Operator's Manual for M1113 and M1114), para 1-10b, this angle is only 17°. Practical experience from the CFLCC AOR, however, indicates an M1114, with a normal center of gravity (cg) and normal load, can in fact operate on side-slopes of up to 30°.

Note: It is never advisable to exceed the limitations specified in the Operator's Manual for any vehicle.

(2) The critical rollover angle for a Combat Patrol-loaded M1114 is less than 30°.

(3) The critical rollover angle for an up-armored HMMWV is 25° – less with higher-cg loads. See figure 2-1.

2-2. **HEAT-specific data**:

a. Rotational speed: 180° turn target speed: Approximately six seconds empty; seven-to-nine seconds loaded.

b. HEAT approximate weight (for transport and floor planning purposes): 10,000 lbs. The M879 lowboy trailer (mover) weighs 19,000 lbs.

Figure 2-1. The Up-armored HMMWV critical rollover angle is 25° – less with higher-cg loads.

c. Approximate manufactured cost for the HEAT is 10,000 U.S. Dollars.

2-3. **Required Equipment and Training Aids** (in addition to paragraph 2-4):

a. Graphic Training Aid (GTA) 55-03-030 (HMMWV Uparmored Emergency Procedures Performance Measures);

b. Modified Table of Organization and Equipment (MTOE)/Table of Distribution and Allowances (TDA)/Organizational Clothing and Initial Issue Equipment (OCIE) personal combat uniform and equipment;

c. HEAT (device) – including padding for beneath device (see paragraph 3-10d);

d. rubber mallet (to seat the troop stands in the device during setup);

e. whistle, air horn or similar signal device;

f. HEAT Written Tests and answer sheets (see appendix H);

g. Combat Lifesaver (CLS) and lifesaver/first aid equipment;

h. for motion distress:
(1) shop (wet/dry) vacuum;
(2) hose and water source;
(3) (at least two) one-gallon pails;
(4) latex (or equivalent) gloves;
(5) shop rags/towels; and
(6) a self-closing trash can, and plastic trash bags;

i. recommended knee- and elbow-pads (flailing and egress injury abatement);

j. safety glasses or goggles (mandatory for eye injury abatement);

k. fire extinguisher (Class A, B, C – at least 10 lb.);

l. flashlights (at least two);

m. Styrofoam blocks (simulated ammo cans, cargo, etc.);

n. paper bags (see tables 4-1 and 4-2); and

o. Hazardous Material (HAZMAT) pigs or sorbent material with which to recover any oils, greases, or organic compounds having leaked or dripped from the simulator, or been expelled from a crewmember.

p. When not used with building-supplied power, an external generator (at least ten kilowatts [kw]), a grounding stake and a sledge will also be required (see TC 11-6 [Grounding Techniques]).

2-4. **Training Uniform.** HEAT Training participants will report to HEAT training with boots, Class C uniform, and protective eyewear (mandatory) they would normally wear when participating in vehicular operations – including their

helmet (e.g., Advanced Combat Helmet [ACH]) body armor, personal (and any crew-served) weapon(s), protective (gas) masks (as/when required by the unit), and that equipment that would typically be worn during conveyance in a HMMWV in a combat zone.

2-5. **Training Requirements**. Primary phase training and annual refresher training is mandatory for use by HMMWV crewmembers in the CFLCC AOR and selected passengers. Primary training will be scheduled at least once during each training year and will include tasks outlined in this POI under paragraphs 4-3 and 4-5 below.

a. Units mobilized for rotation into the CFLCC AOR are encouraged to accomplish at least the Primary phase of HEAT training before arrival in theater.

b. Commanders may select crews to attend Intermediate and/or Advanced training, as Training Schedules and Operation mission loads permit. See paragraph 4-2a(2) when determination is made that crews will conduct Primary, Intermediate and Advanced phases of training in the same session.

c. To maintain currency, personnel will be required to complete annual academic refresher training that will consist of *Academic Phase Learning Objectives* (see paragraph 4-3).

d. For those crews who have completed Intermediate and Advanced training, every three years (triennially) each HMMWV crewmember will be required to participate in a full HEAT refresher/recurrent practical exercise described in table 4-1, in addition to the academics. Commanders may elect to conduct refresher/recurrent training more frequently, subject to Training Schedules, Operational Mission loads, and availability of the HEAT.

e. **Recommended priorities for Stateside use of the HEAT** are:

(1) Units being mobilized for entry into the CFLCC AOR, undergoing Primary training in the HEAT;

(2) units being mobilized, undergoing refresher/recurrent training prior to entry into the CFLCC AOR;

(3) units being mobilized, upgrading to Intermediate or Advanced phase training, prior to entry into the CFLCC AOR; then

(4) others at the discretion of the senior HEAT Instructor (at that site).

f. **Priorities for use of the HEAT in the CFLCC AOR** are:

(1) Gun Truck/Security teams, training as a team;

(2) Additional-duty Gun Truck/Security personnel (i.e., those whose primary duties do not normally include performing convoy escort services, but may be expected to perform in this capacity);

(3) Reception, Staging, and Onward Integration (RSOI) units/individuals undergoing Primary training in the HEAT, by date of onward integration;

(4) RSOI units/individuals undergoing refresher/recurrent training prior to, and by, date of onward integration;

(5) RSOI units/individuals upgrading to Intermediate or Advanced phase training prior to, and by, date of onward integration; then

(6) non-RSOI Quick-Reaction Forces (QRFs), Security Forces, and Emergency Response units/individuals;

(7) non-RSOI units/individuals that routinely move materiel in over-the-road (OTR) convoys;

(8) uniformed non-RSOI units/individuals not otherwise in paragraphs 2-5f(4) and (5) above; then

(9) others at the discretion of the HEAT Senior Instructor.

Chapter 3

Safety Considerations. This chapter defines and delineates the Safety Considerations inherent to operation of the HEAT, and highlights key safety considerations in operation of a HMMWV.

3-1. **Medical pre-screening.** Crewmembers scheduled for HEAT training must understand they must not take any non-prescription medications up to twelve hours prior to commencement of training. HEAT training undertaken while being treated by prescription medications, must be done so with the knowledge and approval of the treating physician.

3-2. **Safety hazard awareness notice**. A potential for a mishap during HEAT training is acknowledged. In order to ensure the safety of staff and HEAT Training participant(s), the following considerations will be addressed. Be alert for those who appear to be experiencing difficulty. Do not hesitate to exercise the Training Time Out (TTO) policy (see appendix B). Motions experienced in the simulator are not abrupt, but are extraordinary to what would (normally) be experienced of/in motor vehicles. In the event of motion discomfort, the individual – or the unit to which the individual belongs – will be responsible for cleaning the physical evidence (i.e., the release of *any* bodily fluid or compound) of such discomfort before training will continue. See paragraphs 2-3h and 3-11.

3-3. **Hazardous conditions and control measures.** Students must be informed of any known hazardous conditions and control measures that exist in the training environment. All watches, rings, and jewelry worn around the neck shall be removed; pagers or cell phones removed; and all pockets emptied of contents – particularly pens, pencils and pocket knives. Earrings should be removed to prevent inadvertent tearing of the earlobe during inversion and egress from the device. Crewmembers must be briefed of their responsibility to report any unsafe/unhealthful condition they may discover. The instructor will identify the location of emergency equipment, fire exits, and local procedures to be used in the event of a fire, injury, or other emergency. In the event of an **in-HEAT emergency**, (**three blasts** on the whistle or sounding of applicable alarm) **exit the HEAT** immediately and proceed to the pre-designated location. A single long blast is an indication to remain inside the device and do *not* open the doors.

3-4. **Environmental Exposure** – Aircrewmembers should not participate in flight duties for at least eight hours after completion of HEAT training to ensure stability in the otolith organs of the vestibular system (reference CFLCC Pam 385-95 [Coalition Forces Land Component Command {CFLCC} Aviation/Flight Safety Program and Aviation Accident Prevention Plan {AAPP}], para. 4-9d(1); and FM 3-04.301 [Aeromedical Training for Flight Personnel], chapter 9).

3-5. **First aid treatment** includes oxygen (O_2) administration, treatment for shock, Cardiopulmonary Resuscitation (CPR) when needed, and transport to the nearest medical treatment facility IAW the Pre-Mishap Plan (appendix C).

3-6. **Pre-training requirements**. Prior to engaging in HEAT training, personnel shall be proficient with the wear and operation of standard uniform and combat equipment worn in the theater, and be familiar with survival, signaling and rescue techniques appropriate to survival situations typical of disabled vehicles in the CFLCC AOR.

3-7. **Emergency medical personnel.** There will be a minimum of one Combat Lifesaver (CLS) on site during any operation of the HEAT. Ideally, CLS services will be provided by the unit undergoing the training. Emergency medical personnel with appropriate equipment and a suitable vehicle for transport will be readily available during all HEAT training. The absence of any criteria in this paragraph requires a reassessment of the risk in appendix F, and the approval of the appropriate risk approval authority.

3-8. **TTO and DOR policies**. Prior to training ensure each HEAT Training participant understands the TTO and DOR policies. Each will fill out a screening sheet (appendix B).

3-9. **Safety reminder.** All personnel will be reminded that personal injury, death, or equipment damage can result from carelessness, failure to comply with the approved procedures, or violations of warnings, cautions, and safety regulations (see paragraph 1-5c).

3-10. **HEAT location safeguards.** The HEAT device will be isolated from passers-by and accidental striking by the device when it is in motion (a DANGER area) by:

a. The device should be completely cordoned-off using theater ropes, cones, tape, etc., by at least 30" on the longitudinal axis, widening to at least 36" around the doors – this includes truck-borne/trailer-borne devices, plus the width/length of the truck/trailer.

b. The floor around the device shall be conspicuously taped in a bright color in the same silhouette dimensions as noted in paragraph 3-10a above. At no time shall personnel be permitted to move inside this isolation (DANGER) area without the specific knowledge and permission of the Lead HEAT Instructor.

c. The device will be grounded prior to operation IAW TC 11-6, or Service equivalent.

d. The floor beneath the device shall have a cushion installed/placed at least six inches thick, providing fall protection coverage from any device opening from which a fall may occur during egress. Alternatively, a safety net or suspension web must be installed between each of the device A-frame stands, and be placed at a sufficient height so as to not impede the rotation of the cab, yet still arrest a fall as described above.

3-11. **Personnel physical requirements**.

a. Prospective trainees will be reviewed by their Unit Administrators/Personnel Officer (S-1)/(A-1) prior to being selected for HEAT training for any profiles or medical conditions that may preclude participation in the training.

b. Trainers will ensure each HEAT Training participant is free of symptoms of motion sickness and any injuries that may present themselves during the training. Symptoms of motion sickness may persist for as long as 12 hours after termination of training. Therefore, all HEAT Training participants shall be required to remain in the immediate training area for at least ten minutes following training to observe for presentation of acute motion sickness symptoms.

3-12. **Licensure and Qualification/Documentation**. Commanders will ensure adequate records of initial training and annual revalidation are maintained on the Optional Form (OF) 346 (U.S. Government Motor Vehicle Operator's Identification Card) (or equivalent) and DA Form 348 (Equipment Operator's Qualification Record [Except Aircraft]) (or Service equivalent) for each participant.

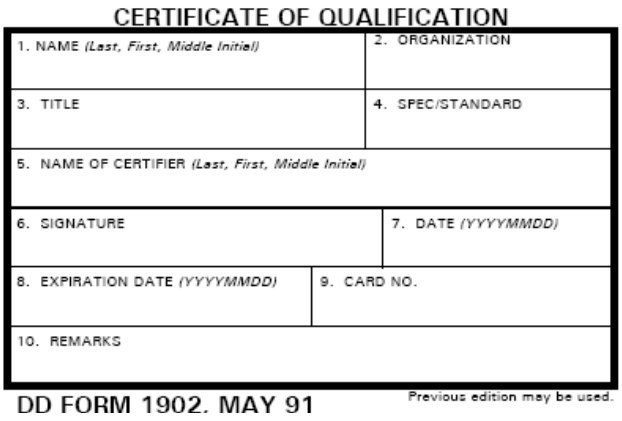
a. The HEAT device shall only be run by Master Driver Trainers certified IAW AR 600-55, and MCO 11240.66 (Standard Licensing Procedures for Operators of Military Motor Vehicles), and/or other applicable prescribing Service directives.

b. A statement of qualification to operate the HEAT shall be made on the Master Driver Trainer's OF 346 and DA Form 348 (or Service equivalents) to the effect of "*HEAT Operation Qualified*".

3-13. **HEAT Operator and HEAT Examiner.** Only Master Driver Trainers certified IAW paragraph 3-12 above may operate the HEAT device. However, HEAT Operators must be trained and certified by competent personnel. As such commanders must determine who is qualified to train the(ir) HEAT Operator(s). Commanders may assign other competent personnel (military, civilian technician, or contracts) as HEAT Examiners. Ideally, someone who is already a Master Driver Trainer or has experience as an Instructor or Safety Officer/NCO may be designated by the commander as a HEAT Operator Examiner. Examiners must be selected not only for their technical qualifications but also for their demonstrated performance, objectivity, and ability to observe and to provide constructive comments. Qualification training for HEAT Examiner will be conducted utilizing the following guidance:

a. Individuals conducting HEAT training must be trained by either another HEAT Operator or HEAT Examiner unless one does not exist. In this case, the commander will designate competent personnel to train, evaluate, and certify each other for the initial designation. After the initial designation of a HEAT Examiner within the unit, all other HEAT Operators will be evaluated and certified IAW this paragraph.

b. Initial qualification training will consist of, as a minimum, hands-on training of all tasks the operator is authorized to perform IAW this TC. Special emphasis will be placed on Academic and Performance Phase Learning Objectives IAW chapter 4 and appropriate PMCS IAW appendix G. All HEAT Operators and HEAT Examiners must annually demonstrate a working knowledge and understanding of the appropriate subject areas in this TC and the ability to administer the HEAT Training Program for the Commander.



CERTIFICATE OF QUALIFICATION

1. NAME *(Last, First, Middle Initial)*	2. ORGANIZATION
3. TITLE	4. SPEC/STANDARD
5. NAME OF CERTIFIER *(Last, First, Middle Initial)*	
6. SIGNATURE	7. DATE *(YYYYMMDD)*
8. EXPIRATION DATE *(YYYYMMDD)*	9. CARD NO.
10. REMARKS	

DD FORM 1902, MAY 91 Previous edition may be used.

Figure 3-1. The DD Form 1902 is issued in addition to the OF 346 as unique evidence of the qualification of a HEAT Examiner

c. The initial/annual evaluation will determine the HEAT Operator's ability to train other personnel and perform essential tasks to the prescribed standards. HEAT Examiners may evaluate HEAT Operator(s) by observing the performance of the prescribed duties or by functioning as a crewmember undergoing HEAT training by the HEAT Operator, in order to evaluate the effectiveness of the HEAT Operator's instruction.

d. HEAT Operators and HEAT Examiners will be certified IAW paragraph 3-12 above. In addition, HEAT Examiners will be issued a DD Form 1902 (Certificate of Qualification) as unique evidence of their qualification and designation (see figure 3-1).

Chapter 4

HEAT Learning Objectives and POI. This chapter outlines the basic and detailed training criteria for the HEAT, and guidance for adapting this training into operations and missions involving the HMMWV.

4-1. **Basic lesson plan and HMMWV crew review material** – Set-up (see appendix I) and Pre-Operational use inspection of the HEAT (see appendix G):

a. Demonstrated rollover of device while empty – observing rollover rate, and checking for free-floating and unsecured obstacles within the device.

b. Check the taped-off stay-clear area around and beneath the HEAT is clear, and only authorized personnel are within the clear area during HEAT operation.

c. Inspect the seatbelts and restraints for condition and security, and ease of operation at each position in the HEAT.

d. Check the motor controls and electrical connections of the HEAT to the building electrical outlet are secure and serviceable.

e. The senior HEAT Instructor on duty will endorse the logbook for the device that the daily and before-use checks have been completed, and no weekly, monthly, quarterly or annual inspections/services are overdue.

4-2. **Terminal Learning Objective (TLO)**. As a HMMWV crewmember, perform inspection, clearing, and egress procedures with the HEAT while wearing required combat equipment and adhering to applicable safety precautions and procedures outlined in this POI.

a. **Overview and general scheme of training**.

(1) Training in the HEAT is normally conducted in **phases**, as described in paragraph 4-4 and table 4-1 – a **Primary** phase, an **Intermediate** phase, and an **Advanced** phase. Refresher training (as described in paragraph 2-5d) entails recurrence based upon the Advanced phase, as described in paragraph 4-5a.

(Table 4-1 and subsequent text continued on next page.)

Table 4-1
HEAT Phase and Crew/Battle Drill Descriptions

HEAT Phase	Crew/Battle Drill Descriptions
Primary *(Crawl)*	1. The first drill is for familiarization, pausing to highlight the 30- and 25-degree critical rollover angles. 2. The second drill shall be a "dry run" – completely rolling over (inverted) – no actual release of the seatbelts or gunner's harness will be made. 3. The third will entail inverting the device, and participants actually exiting the device, as though it had rolled on dry land. 4. After righting the device, crew rotating seats and re-entering the device – the fourth drill will entail inverting the device, simulating a water entry.
Intermediate *(Walk)*	1. The first drill is a "dry run" – completely rolling over (inverted) – no actual release of the seatbelts or gunner's harness will be made. 2. The second drill will entail inverting the device, and participants actually exiting the device, as though it had rolled on dry land. 3. After righting the device, crew rotating seats and re-entering the device – the third drill will entail inverting the device, simulating a water entry. 4. After righting the device, crew again rotating seats and re-entering the device – the fourth drill will entail darkening the room in which the device is operated, then inverting the device, simulating a rollover at night on dry land.
Advanced *(Run)*	1. The first drill will entail inverting the device, and participants actually exiting the device, simulating a water entry. 2. After righting the device, crew rotating seats and re-entering the device – the second drill will entail darkening the room in which the device is operated. The instructor will pop a paper bag, simulating an explosion. The device will then be inverted, simulating a rollover at night on dry land. 3. The third drill will be as the second, except with the introduction of Styrofoam blocks to simulate ammo cans and debris in the vehicle – as is typical in a typical convoy or tactical mission. This drill will simulate a night water immersion, and the right front door cannot be opened. 4. The final drill will be as the third, except with the introduction of a wounded gunner with a simulated broken neck and back, who must be extracted from the night water immersion.
Refresher/Recurrence	1. The first drill is a re-familiarization ride, pausing to highlight the 30- and 25-degree critical rollover angles. 2. The second drill will entail darkening the room in which the device is operated. The instructor will pop a paper bag, simulating an Improvised Explosive Device (IED) or a blown tire. The simulator will then be inverted, simulating a rollover at night on dry land. 3. After righting the device, crew rotating seats and re-entering the device – the final drill will be as the second, except: a. The introduction of Styrofoam blocks to simulate ammo cans and debris in the vehicle – as is typical of most convoy or tactical missions; b. a simulated night water immersion; c. the right front door cannot be opened; d. the Gunner has notionally suffered a gunshot wound to the chest, and is immobile; and e. the Vehicle Commander (right front seat) has lost their right leg below the knee, and is bleeding profusely.

Note: Units should man the HEAT in training IAW their Standing Operating Procedure (SOP) as they would conduct combat convoy escort patrols (i.e., if the unit training in the HEAT has combat convoy escort patrols as one of their METL tasks, and their SOP directs only a driver, Vehicle Commander [VC] and gunner in the vehicle, then their training should not include a back-seat crew during HEAT training).

(2) As determined and requested by the Commander, units may opt to perform the Primary, Intermediate and Advanced Phases of training in the same session – depending on availability of the device, METL of the unit being trained, etc. Since table 4-1 assumes a certain lapse of time between each phase, certain accommodations should be made in the POI to reflect this accelerated approach. The HEAT Instructor and Master Driver Trainer are afforded discretion and operational flexibility in making such accommodations, and an adjusted POI is reflected in table 4-2 below.

(Table 4-2 and subsequent text continued on next page.)

Table 4-2
Consolidated/Accelerated HEAT Crew/Battle Drill Descriptions

HEAT Phase	Crew/Battle Drill Descriptions
Consolidated/Accelerated **Primary** *(Crawl)*, **Intermediate** *(Walk)*, and **Advanced** *(Run)*.	1. The first drill is a familiarization ride, pausing to highlight the 30- and 25-degree critical rollover angles. 2. The second drill shall be a "dry run" – completely rolling over (inverted) – no actual release of the seatbelts will be made. 3. The third will entail inverting the device, and participants actually exiting the device, as though it had rolled on dry land. 4. After righting the device, crew rotating seats and re-entering the device – the fourth drill will entail inverting the device, simulating a water entry. 5. After righting the device, crew rotating seats and re-entering the device – the fifth drill will entail darkening the room in which the device is operated. The instructor will pop a paper bag, simulating an explosion. The device will then be inverted, simulating a rollover at night on dry land. 6. The sixth drill will be as the second, except with the introduction of Styrofoam blocks to simulate ammo cans and debris in the vehicle – as is typical of most convoy or tactical missions. This drill will simulate a night water immersion, and the right front door cannot be opened. 7. The final drill will be as the sixth, except with the introduction of a wounded gunner with a simulated broken neck and back, who must be extracted from the night water immersion.

(3) Each training phase is comprised of four **stages**, as depicted in figure 4-1: Academics, Observation, Training, and Debrief. Each stage entails five HEAT Training participants and one instructor. While training with the HEAT is generally event-driven, approximate times in each stage are denoted in figure 4-1.

(a) Total cycle time for the HEAT is conservatively one hour and 35 minutes (for table 4-1; table 4-2 will require slightly more time, based on the event-driven training performed by the HEAT Instructor).

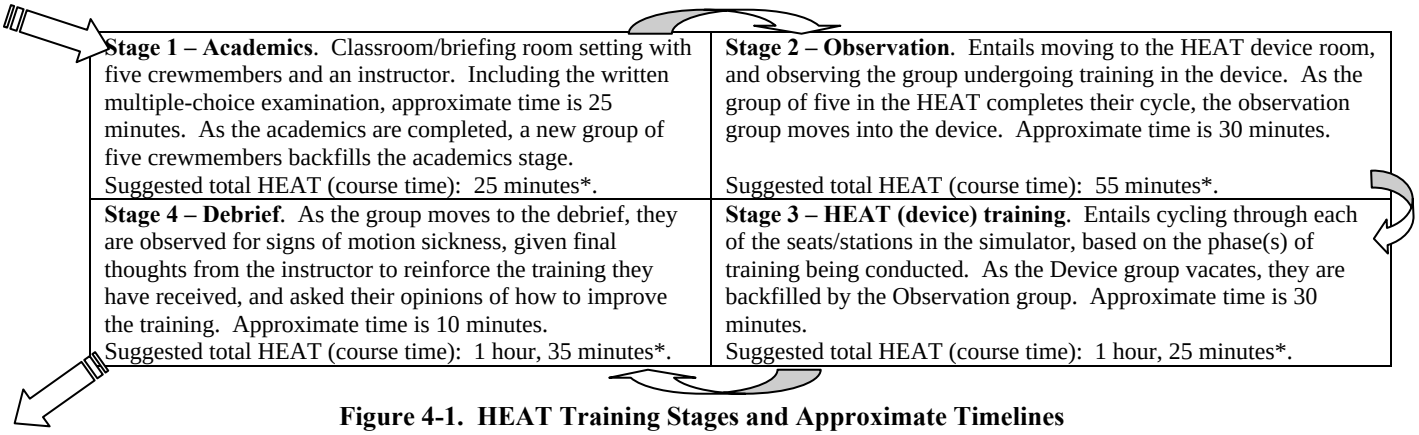


Figure 4-1. HEAT Training Stages and Approximate Timelines

Note: (From * above) Stage 1 may be completed prior to arrival at the HEAT device IAW paragraph 4-2a(2)(b) and appendix J, effectively reducing total cycle time to one hour ten minutes. Approximately ten minutes should be added to stage 2, when this is the case, for a safety briefing prior to boarding the device.

(b) Provided the Academic portion of the training in stage 1 is completed prior to arrival at the device (as certified IAW appendix J), total cycle time for the HEAT is (then) conservatively one hour and 20 minutes – allowing for a Safety briefing in stage 2 prior to boarding the device.

(c) As a crew cycles out of stage 1, they rotate to stage 2, etc. Units and organizations involving more than five HEAT Training participants rotate their crew into the cycle in groups of five.

(d) The same instructor should rotate through the entire HEAT cycle with the same team, allowing for continuity and consistency in the training and concepts presented during each stage.

(4) Cycle times are consistent for each phase of training.

(a) The completion of academics from any phase of training satisfies the academic prerequisite for any hands-on device training for one year.

Note: For purposes of this TC, and unless otherwise distinguished, the terms *Trainer*, *Device*, and *Simulator* are synonymous.

(b) When graduating from one phase to another, the corresponding cycle times are adjusted IAW paragraph 4-1a(2)(b).

b. **Total HEAT cycle**: Approximately one hour and 35 minutes (95 minutes).

c. **Total HEAT participants** in a given ten-hour duty day (discounting an hour for lunch): About 100.

d. **Total HEAT Instructors required**: Four – one in academics, two on the HEAT device floor, and one in debrief.

e. **Minimum HEAT Instructors required** to safely conduct training: Two – one in academics, one on the HEAT device floor (debrief functions shift between the floor instructor and the academics instructor). If operating two HEAT devices in the same hangar/building, at least three instructors are required, since one can perform the academics for both devices; an instructor with each device; and debrief functions alternating between the instructors.

Note: The senior HEAT Instructor may augment (not substitute) the cadre with the use of safety observers – briefed to perform that function – from observers waiting to ride in the device, or those crewmembers who have already undergone training in the device.

4-3. **Academic phase learning objectives**. Students will be able to state and/or describe procedures relating to the following subjects: a) Proper pre-drive checks for the HMMWV (as they relate to the HEAT); b) clearing the HEAT/HMMWV upon egress; c) check for injuries; and d) removing injured personnel, and accountability of personnel upon egress.

a. Students are encouraged to have completed:

(1) Selection, training, testing and licensure in an Army Motor Vehicle (AMV)/Utility Service vehicle – preferably the HMMWV – IAW DODI 6055.4, AR 600-55, AFI 91-207, or MCOs 5100.19, and 5110.1.

(2) The *Accident Avoidance Course* – available on Army Knowledge Online (AKO) (www.us.army.mil) – or equivalent course, prior to undergoing training in the HEAT. This academic foundational instruction serves as a sound prerequisite for advanced driving skills taught in –

(3) a hands-on course such as the *Safe Driver Training Program* prior to attending the HEAT. This course – sponsored by ASG-Kuwait, and conducted by contracted instructors – is best seen as an effective prerequisite in learning how to avoid rollovers and rollover conditions in the HMMWV.

(4) It is desirable to have completed the HEAT Academics prior to arrival at the device IAW paragraph 4-2a(2)(b), and appendix J.

b. In a classroom with appropriate training aids available, instruction shall be provided on the inspection, use and safety features of the HEAT. Video presentations may be used in conjunction with instruction.

c. Practical exercises shall be completed in the classroom with each HEAT Training participant demonstrating the inspection and deployment of the HEAT. Each participant will pass a written test (appendix H) on the operation of the HEAT and egress procedures. A minimum score of 80% (minimum) is required prior to attending the performance phase of training.

d. Before using any HEAT device, HMMWV crewmembers will be trained IAW this POI – particularly those portions that outline training, qualification, and recurrence/refresher. Persons completing a comparable formal course of instruction for HEAT qualification, that meets all the criteria in this POI, may be certified at the commander's discretion.

4-4. **HEAT Performance phase learning objectives**. Understand preventive measures to preclude rollover.

a. Combat door locks on the M1114 Up-armored HMMWV keep the enemy out. When locked, they make it extremely difficult for rescuers to enter the vehicle. Commanders should determine when combat locks should be used when conducting operations near bodies of water. Also, consideration must be given to the inherent difficulty in opening an unlocked armored door – since it was not designed to swing on an inverted hinge – and the risk added to the assessment for such operations. See figure 4-2.

(1) Accident damage may also jam doors, making them impossible to open.

(2) If the doors cannot be opened and the vehicle is in water too deep to allow air in the vehicle, the likelihood of drowning is significantly elevated. In this case, rescuers must immediately roll the vehicle on its side using all available means (tow straps, rope, winch cables, etc.) to gain access to the turret.

Figure 4-2. The armored door was not designed to swing on an inverted hinge – an added risk for such operations.

b. **Preventive measures**.

Note: Never attempt to jump from a rolling vehicle. It may roll over you. Ensure the vehicle has stopped rolling before exiting. Upon complete evacuation of the crew, vehicle should be inspected for fire hazards such as leaking oil, fuel, ammunition and hydraulic fluid. If hazardous/explosive materials are involved, the driver must take actions according to the DD Form 836 (Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles) accompanying the load. Notify rescue personnel and remain a safe distance while securing the accident site.

(1) **Slow down**. Watch for sharp curves and steep slopes. Curves and slopes generate centrifugal forces that act sideways on the vehicle, increasing the chance of rollover.

(2) **Avoid panic** – don't jerk the steering wheel. Many rollovers occur when the driver panics and/or jerks the steering wheel during an emergency. At highway speed, jerking the steering wheel can cause loss of control and the vehicle may slide sideways and roll over.

(3) **Know proper maneuvering**. If you drive off the roadway, gradually reduce speed. Ease your vehicle back onto the roadway at a safe speed.

(4) **Use caution** on rural roads, or roads with soft or no shoulders. When a vehicle goes off a road, the vehicle can overturn when it strikes a ditch or embankment, or is tripped by soft soil or a failed tire sidewall.

(5) When in the vicinity of water and tactical conditions permit:
(a) Reduce speed and stop vehicle;
(b) inform crewmembers that you are operating around potential water hazards;
(c) make a Risk Assessment of the terrain and route before proceeding;
(d) maintain orientation by wearing seatbelts; and
(e) unlock combat door locks.

c. **Pay attention to vehicle condition, tire pressure and loading**.

(1) Pay particular attention to tire condition and air pressure during each PMCS to reduce potential hazards. Worn or improperly inflated tires increase your risk of rollover.

(2) Don't overload the vehicle. The M1114 payload is 2,300 lbs./1,043 kg. This includes the passengers, winch, gunner's protection kit, spare tire, weapons, and all cargo.

(3) Keep the vehicle cg low. Load heavier items low in the vehicle, or to the upslope side. Increasing the height of your vehicle cg increases your risk of rollover.

(4) Secure the load. Improperly secured loads can shift and become hazards within the vehicle and increase the chance of rollover.

(5) Slow before cresting a hill. It is impossible to tell what is on the other side of the crest. Consider sounding the horn in such circumstances, and tend to the right side of the road as conditions permit. Be prepared to crest the hill and find a vehicle stopped in your path – or worse, on a collision course in your lane.

(6) Trailer towing. Vehicles towing trailers are much more prone to rollover, especially in curves and during sudden steering maneuvers, as a result of exaggerated motion of the trailer. Adjust speed accordingly.

d. **Work as a Team: Maintain Crew Integrity** – train as a team.

(1) Communicate with the driver – tell the driver what is to the left, right, rear and overhead. Your gunner is your eyes and ears. The gunner may be the only crewmember capable of seeing around the entire vehicle (see figure 4-3).

Figure 4-3. The gunner may be the only crewmember capable of seeing around the entire vehicle.

Use the vehicle intercom system to pass visual information to the driver, but rehearse shouted voice commands and hand signals in case the intercom is inoperative. Avoid hazards, use a ground guide whenever practicable. The gunner must remain in *nametag defilade* IAW FM 21-305 (Manual for the Wheeled Vehicle Driver), TC 21-305 (Training Program for Wheeled Vehicle Accident Avoidance), TC 21-305-4 (Training Program for the High Mobility Multipurpose Wheeled Vehicle), and TC 21-306 (Tracked Combat Vehicle Driver Training).

Note: Of all the vehicle occupants, the likelihood of injury to the gunner is disproportionately higher than those of the others. Knowing the fundamental purpose of the HEAT, those occupying the gunner position must exercise particular diligence in securing occupant restraints, bracing for the rollover, and be particularly mindful of the increased potential for head and neck injuries – even in the device. Further, those occupying the gunner position in the HEAT must verify prior to each rollover iteration that the gunner hatch locking mechanism remains secure, and to avoid inadvertent disengagement of the lock during each rollover (see figure 4-4).

(2) Wear seatbelts. Survive the rollover!

(3) **During the roll**:

(a) **The driver drives**. Continue to navigate the vehicle as long as the controls of the vehicle influence and direct its path and speed.

(b) **The gunner must slip out of the gunner's seat**, attempting to retract into the cab of the vehicle as quickly as possible. While this action doesn't eliminate the bouncing around inside the vehicle, it substantially reduces the likelihood of decapitation, and puts the rollcage of the vehicle between the gunner and the accident site.

(c) **All others in the vehicle must make a grab for the gunner**, assisting them as abruptly as necessary to get into the cab of the vehicle as quickly as possible.

(4) Use combat locks – safely. Combat locks help keep the doors closed in a crash, but are often a hazard near water. Unlock combat door locks when near water (enemy situation permitting).

Figure 4-4. The gunner must verify prior to each rollover iteration that the gunner hatch locking mechanism remains secure.

(5) Know how to get out. Rehearse vehicle evacuation as if only one exit is available. **Actual egress entails**:

(a) **BRACE** with one hand against the floor (what *was* the ceiling).

(i) Consider which hand you should brace with (figure which hand can reach your seatbelt, and use the other one to brace).

(ii) Do not unlatch your seatbelt without bracing on the floor – your neck cannot support your body weight, let alone with all the *battle rattle* you have on.

(b) **UNFASTEN** your seatbelt with your other hand.

(i) Push against the floor with your bracing hand to release the tension on the seatbelt so it will unfasten.

(ii) Find the release button and press it firmly until it pops loose.

(iii) Be prepared to fall when the belt unlatches. Tuck your head, and protect your neck at all costs.

(c) **SLIDE** out of your seat, being sure to **disconnect your headset**.

(i) Remember that you cannot open the door while inverted.

(ii) Be aware of your buddies and don't kick them in the face.

(iii) Muzzle awareness at all times.

(iv) Be aware your gear may get caught on something.

(d) **ORIENT** yourself on the door.

(i) Dropping out of your seat is more disorienting than expected.

(ii) Get yourself right side up before worrying about the door.

(iii) Look at the door – consider how it will open now that it is inverted.

(e) **UNLOCK AND OPEN** the door. If it doesn't open, find a door that works. Recall whether your vehicle is one with two-stage combat locks or one-stage, and the differences it takes to open each.

(i) Armored doors weigh 240 pounds each, and are not meant to be inverted.

(ii) The door may be difficult or impossible to open.

(iii) Once the latch is open, you will have to really lean into the door to get it open. However, if your door is not opening, try another door!

(iv) When you open a door, shout "Open door *(and the location)*!"

(f) **GET OUT**, but don't let your buddy down.

(i) Determine if all crewmembers are aware of the open door, and whether they are moving toward it.

(ii) Determine if all crewmembers are conscious.

(iii) Consider the risks of moving injured soldiers – don't make the situation worse, but you can't leave them hanging upside down, nor there to drown.

(iv) Look before you leap – don't rush out the first door, only to fall off a cliff, or thrust yourself into a burning fuel or oil slick.

(6) The **Gunner's egress** entails some specific and additional steps:

(a) Slide feet to the direction of roll, as the torso and legs are withdrawn to present the lowest possible profile.

(b) Depending on how the rear seats are occupied:
(i) When both rear seats are occupied, both rear seat occupants will maintain a firm grasp on the gunner, pulling the gunner down inside the vehicle through the turret – assisting in restraining the gunner throughout the rollover until the vehicle has come to a stop.
(ii) If only one rear seat is occupied, the back seat occupant will pull the Gunner toward them, much as described above.

(c) Unlatch the gunner's lanyard/harness, and egress.

e. As with any military operation, once the situation permits, report the mishap IAW AR 385-40, AFI 91-204 (Safety Investigation and Reports), MCO P5102.1 (Marine Corps Ground Mishap Reporting), or OPNAVINST 5102.1 (Mishap Investigation and Reporting); and the Unit SOP.

4-5. **HEAT Performance phase learning objectives, and rollover (sequence)** drill task steps and performance measures. Two HEAT instructors will be present at all times the device is in use. The front instructor (device operator) shall control the electric motor for roll operations. Both operators will do a complete walk-around of the device prior to each roll to verify door closure and positive locking of the gunner hatch lock mechanism – and security of each crewmember in their seats, with their seat belts securely fastened. Prior to device operation, both instructors will position themselves on opposite ends of the device, diagonally across from each other to allow a clear and unobstructed view of both sides of the device to ensure doors remain closed throughout the roll cycle.

a. The Vehicle Commander (VC) position will always be manned if there is more than one person in the device. The VC is responsible for ensuring all personnel within the HEAT are buckled in, the gunner is properly restrained, and the combat locks are engaged on all doors.

b. The device operator will call, ***"Pin is out – device is unlocked, clear front."*** The instructor positioned at the rear of the device will respond, ***"Doors locked – clear in the back."***

c. Once all positions report ready to the VC, the VC will give a thumbs-up sign to the Primary HEAT Instructor (switch operator); who will give a **single blast on the whistle or horn to signal rotation**. Only then is the device ready for operation.

d. Procedures for the use of the HEAT will be per appendix F. When the crewmembers are ready, the device operator will rotate the simulator. Crewmembers will lower their chins to their chests, pull their arms across their chests, and brace their legs against the floor without locking their knees. Once the rolling has stopped, and the device is in the desired position to complete the crew/battle drill, the Primary Instructor will give **three blasts** on the whistle/horn as the signal to **egress**. Crewmembers will remain in the belted position until the device comes to a complete stop, and the Primary Instructor sounds the three blasts. Crewmembers will wait three to five seconds to orient themselves, brace against the ceiling with one hand then release the lap belt with their other hand. Next, they will pull down free of the seat and rotate to a horizontal face down position while holding on to a reference point with both hands. The crew will then proceed with a normal egress.

e. Execute rollover drill (Water egress considerations and additional steps are indicated in red):

Note: All personnel in a seat with restraints will wear them.

(1) **Driver**.
(a) Releases the accelerator.
(b) Yells, *"Rollover!"* When water entry is imminent, yells, *"Water!"*
(c) Keeps hands on the steering wheel, tucks head and chin into chest and braces for impact.
(d) Steers vehicle to control entry into the water to prevent rollover.

Note: Although TC 21-305 , para. 3-2b **Note** prescribes the yelling of *"Rollover!"*, each crewmember should repeat the *"Rollover!"* call as many times as it takes to garner the attention of any drowsy or inattentive crewmembers.

(2) **Vehicle Commander (VC)**.
(a) Yells, *"Rollover!"* When water entry is imminent, yells, *"Water!"*
(b) Pulls gunner into cab.
(c) Tucks head and chin into chest and braces for impact.
(d) Plants feet firmly on the floor without locking the knees, while holding onto a stationary object.

(3) **Gunner**.
(a) Yells, *"Rollover!"* When water entry is imminent, yells, *"Water!"*
(b) Pushes/pulls self down into the vehicle.
(c) Tucks head and chin into chest and holding onto a stationary object, brace for impact.

(4) **Crew**.
(a) Yells, *"Rollover!"* When water entry is imminent, yells, *"Water!"*
(b) Pulls gunner into cab.
(c) Tucks head and chin into chest and braces for impact.
(d) Plants feet firmly on the floor without locking the knees, while holding onto a stationary object.

4-6. **HEAT performance phase learning objectives. Egress (sequence)** drill task steps and performance measures. Execute egress drill. After the rollover has stopped (Water egress considerations and additional steps are indicated in red):

a. **Driver**:
(1) Disconnects headset.
(2) Releases seatbelt; uses caution if upside down.
(3) Assesses injuries.
(4) Unlocks combat door locks.
(5) Exits the vehicle with weapon.
(6) Assists crew to exit.
(7) Checks for fire.
(8) Provides security.
(9) Provides first aid.
(10) Recovers sensitive items.
(11) Assists in vehicle recovery.

(3) Exits the vehicle.
(4) Assesses injuries.
(5) Assists crew to exit and secures weapon.
(6) Decides whether to remove load-bearing equipment (LBE), body armor, and helmet.
(7) Gets to safest shore.
(8) Provides security.
(9) Accounts for crewmembers.
(10) Provides first aid.
(11) Recovers sensitive items.
(12) Assists in vehicle recovery.

b. **VC**:
(1) Disconnects headset.
(2) Releases seatbelt; uses caution if upside down.
(3) Assesses injuries.
(4) Unlocks combat door locks.
(5) Exits the vehicle with weapon.
(6) Assists crew to exit.
(7) Establishes security.
(8) Accounts for sensitive items.
(9) Reports accident.
(10) Provides first aid.
(11) Assists in vehicle recovery.

(3) Exits vehicle.
(4) Assesses injuries.
(5) Assists crew to exit and secures weapons.
(6) Decides whether to remove LBE, body armor, and helmet.
(7) Gets to safest shore.
(8) Establishes security items.
(9) Accounts for crewmembers.
(10) Accounts for sensitive items.
(11) Reports accident.
(12) Provides first aid.
(13) Assists in vehicle recovery.

c. **Gunner**:
(1) Disconnects headset.
(2) Assesses injuries.
(3) Clears and checks weapon for serviceability.
(4) Exits vehicle with weapon.
(5) Assists crew to exit.

(2) Releases seatbelt; uses caution if inverted.
(3) Exits the vehicle.
(4) Assesses injuries.
(5) Clears and checks weapon for serviceability.

(6) Establishes security.	(6) Decides whether to remove LBE, body armor, and helmet.
(7) Recovers sensitive items.	(7) Gets to safest shore.
(8) Provides first aid.	(8) Provides security.
(9) Assists in vehicle recovery.	(9) Recovers sensitive items.
	(10) Provides first aid.
	(11) Assists in vehicle recovery.

d. **Crew**:

(1) Disconnects headset(s).

(2) Releases seatbelt; uses caution if inverted.

(3) Assesses injuries.	(3) Exits the vehicle.
(4) Unlocks combat door locks.	(4) Assess injuries.
(5) Exits the vehicle with weapon.	(5) Assists crew to exit and secure weapons.
(6) Assists crew to exit.	(6) Decides whether to remove LBE, body armor, and helmet.
(7) Provides security.	(7) Gets to safest shore.
(8) Provides first aid.	(8) Provides security.
(9) Recovers sensitive items.	(9) Accounts for crewmembers.
(10) Assists in vehicle recovery.	(10) Provides first aid.
	(11) Recovers weapons, ammunition, and sensitive items.
	(12) Assists in vehicle recovery.

e. Water Rescue and Recovery.

(1) Secure the accident site.

(2) Stay in contact with the vehicle, hold onto the vehicle and kick/swim to a high point in buddy teams.

(3) Rescuers tie a rope, tow strap or cable to the vehicle to aid in rescue.

(4) Open doors and hatches.

(5) If doors and hatches are not accessible, rescuers must immediately use all available means to turn the vehicle on its side to gain access to the turret – being mindful of the possibility of rolling the vehicle into even deeper water, or further into a current.

(6) Seek out the highest point on/in the vehicle.

(7) Ensure all survivors have air and are able to breathe.

(8) Check for other injuries and apply first aid.

(9) Carefully move injured personnel to the highest point on the vehicle.

(10) Remove excess equipment, to include body armor, in deep water.

(11) Evacuate from vehicle high point to safest location, depending on:

(a) Enemy situation;

(b) water level and flow;

(c) water temperature (hypothermia consideration);

(d) distance to waters edge; and

(e) anticipation of rescue.

(Appendix A and subsequent text continued on next page.)

Appendix A

Note: Internet addresses shown are current as of publication of this TC, and are subject to change. Always consult the proponent for the latest version (on internet address, as applicable) of the affected publication.

References

Section I
Required Publications

Note: The publications referenced in this section are (only) those considered essential to the use and understanding of this TC, and does not necessarily denote a mandate for retention of each publication (reference DA Pam 25-40, para. B-6g(1); and paragraph 3-6b of this pamphlet). Each provides an insight and background to the text in which they appear, and the citation of each is the chief criteria for their notation in this section.

CFLCC TC 21-305-4.1/CFLCC Pam 91-208(I)/CFLCC INST 5101.3A
Tactics, Techniques and Procedures (TTPs), Program of Instruction (POI), and Crew/Battle Drills for the High Mobility Multipurpose Wheeled Vehicle (HMMWV) Egress Assistance Trainer (HEAT). (Cited in paragraph History)
https://freddie.forscom.army.mil/3A_RA/policy_memo/policy_memo.asp

FM 21-305
Manual for the Wheeled Vehicle Driver. (Cited in paragraph 4-4d(1))
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/21-305/fm21305.htm

GTA 55-03-030
HMMWV Uparmored Emergency Procedures Performance Measures. (Cited in paragraph 2-3a)
http://crc.army.mil/Tools/detail.asp

TC 11-6
Grounding Techniques. (Cited in paragraphs 2-3o, and 3-10c)
http://www.logsa.army.mil/etms/find_etm.cfm

TC 21-305
Training Program for Wheeled Vehicle Accident Avoidance. (Cited in paragraphs 4-4d(1), and 4-5e(1)(d) **Note)**)
http://atiam.train.army.mil/portal/atia/adlsc/view/public/295262-1/tc/21-305/toc.html

TC 21-305-4
Training Program for the High Mobility Multipurpose Wheeled Vehicle. (Cited in paragraph 4-4d(1))
http://atiam.train.army.mil/portal/atia/adlsc/view/public/295262-1/tc/21-305-4/toc.html

TM 9-2320-280-10
Operator's Manual for the M998 through M1035. (Cited in paragraph 2-1g)
http://www.logsa.army.mil/etms//find_etm.cfm

TM 9-2320-387-10
Operator's Manual for the M1113 and M1114. (Cited in paragraph 2-1g)
http://www.logsa.army.mil/etms//find_etm.cfm

Section II
Related Publications

Note: Related publications are sources of additional information. The user does not have to read them to understand this pamphlet (reference DA Pam 25-40, para. B-6g(2)).

(Appendix A, Section II and subsequent text continued on next page.)

29 CFR 1910
Occupational Safety and Health Standards. (Cited in paragraph 1-3)
http://www.osha-slc.gov/OSHStd_toc/Std_tod_1910.html

29 CFR 1960
Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters. (Cited in paragraph Summary)
http://www.osha-slc.gov/OshStd_toc/Std_toc_1960.html

AFI 33-360V1
Publications Management Program. (Cited in paragraphs History, A Note About Mandates Versus Guidance in This TC, and Distribution)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=33

AFI 90-1102
Performance Management. (Cited in paragraph Army Performance Improvement Criteria (APIC) and (USAF) Performance Management)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=90

AFI 91-202
The US Air Force Mishap Prevention Program. (Cited in paragraph Summary)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=91

AFI 91-204
Safety Investigation and Reports. (Cited in paragraph 4-4e)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=91

AFI 91-207
The US Air Force Traffic Safety Program. (Cited in paragraph Summary)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=91

AFI 91-301
Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program. (Cited in paragraph Summary)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=91

AFI 91-302
Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Standards. (Cited in paragraph Summary)
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=91

AFI 90-901
Operational Risk Management. (Cited in paragraphs Summary, and 1-6d(1))
Http://afpubs/hq.af.mil/pubs/pubslist.asp?puborg=AF&series=90

AFMAN 37-123
Management of Records. (Cited in appendix B)
http://www.e-publishing.af.mil

AFMAN 91-221
Weapons Safety Investigation and Reports. (Cited in Glossary – Section II)
http://www.e-publishing.af.mil

AFMAN 91-223
Aviation Safety Investigations and Reports. (Cited in Glossary – Section II)
http://www.e-publishing.af.mil

AFMAN 91-224
Ground Safety Investigations and Reports. (Cited in Glossary – Section II)
http://www.e-publishing.af.mil

AFOSHSTD 91-501
Air Force Consolidated Occupational Safety Standard. (Cited in paragraph Summary)
http://www.e-publishing.af.mil

AFPAM 90-902
Operational Risk Management (ORM) Guidelines and Tools. (Cited in paragraphs Summary, and 1-6d(1))
http://www.e-publishing.af.mil

AFPD 37-1
Information Management. (Cited in appendix B)
http://www.e-publishing.af.mil

AFPD 90-9
Operational Risk Management. (Cited in paragraphs Summary, and 1-6d(1))
http://www.e-publishing.af.mil

AFPD 91-2
Safety Programs. (Cited in paragraphs Summary, and 1-3)
http://www.e-publishing.af.mil

AFPD 91-3
Occupational Safety and Health. (Cited in paragraph Summary)
http://www.e-publishing.af.mil

AR 5-1
Army Management Philosophy. (Cited in paragraph Army Performance Improvement Criteria [APIC], USAF, and Naval Performance Management)
http://books.usapa.belvoir.army.mil/cgi-bin/bookmgr/BOOKS/R5_1/CCONTENTS

AR 5-4
Department of the Army Productivity Improvement Program. (Cited in paragraph Army Performance Improvement Criteria [APIC], USAF, and Naval Performance Management)
http://www.usapa.army.mil/pdffiles/r5_4.pdf

AR 5-24
Management Improvement and Productivity Enhancement in the Department of the Army. (Cited in paragraph Army Performance Improvement Criteria [APIC], USAF, and Naval Performance Management)
http://www.usapa.army.mil/pdffiles/r5_24.pdf

AR 11-2
Management Control. (Cited in paragraph (Army) Management Control Process)
http://www.usapa.army.mil/pdffiles/r11_2.pdf

AR 25-400-2
The Army Records Information Management System (ARIMS). (Cited in appendix B)
http://www.usapa.army.mil/pdffiles/r25_400_2.pdf

AR 385-10
The Army Safety Program. (Cited in paragraph Summary; and Glossary – Section II)
http://www.usapa.army.mil/pdffiles/r385_10.pdf

AR 385-40
Accident Reporting and Records. (Cited in paragraph 4-4e; and Glossary – Section II)
http://www.usapa.army.mil/pdffiles/r385_40.pdf

AR 385-55
Prevention of Motor Vehicle Accidents. (Cited in paragraph Summary)
http://www.usapa.army.mil/pdffiles/r385_55.pdf

AR 385-95
Army Aviation Accident Prevention. (Cited in paragraphs Summary, A Note About Mandates Versus Guidance in this TC, and (Army) Management Control Process; and Glossary – Section II)
http://www.usapa.army.mil/pdffiles/r385_95.pdf

AR 600-55
The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing). (Cited in paragraphs Summary, 3-12a, and 4-3a(1); and Glossary – Section II)
http://www.usapa.army.mil/pdffiles/r600_55.pdf

CFLCC Pam 385-95/CFLCC Pam 91-11(I)/CFLCC INST 3750.6A
Coalition Forces Land Component Command (CLFCC) Aviation/Flight Safety Program and Aviation Accident Prevention Plan (AAPP). (Cited in paragraph 3-4; and appendix C)
https://freddie.forscom.army.mil/3A_RA/policy_memo/policy_memo.asp

DA Pam 25-40
Administrative Publications: Action Officers Guide. (Cited in paragraphs History, A Note About Mandates Versus Guidance in This Pamphlet, Distribution; appendix A – Section I **Note**, and -Section II **Note**)
http://www.usapa.army.mil/pdffiles/p25_40.pdf

DA Pam 385-40
Army Accident Investigation and Reporting. (Cited in appendix D)
http://www.usapa.army.mil/pdffiles/p385_40.pdf

DODI 6055.1
DoD Safety and Occupational Health (SOH) Programs. (Cited in paragraph History)
http://web7.whs.osd.mil/pdf/i60554p.pdf

DODI 6055.4
DoD Traffic Safety Program. (Cited in paragraph History)
http://web7.whs.osd.mil/pdf/i60554p.pdf

DODI 6055.7
Accident Investigation, Reporting, and Record Keeping. (Cited in paragraph History)
http://web7.whs.osd.mil/pdf/i60557p.pdf

FM 3-04.301
Aeromedical Training for Flight Personnel. (Cited in paragraph 3-4)
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-14/default/htm

FM 3-100.12/AFTTP 3-2.34(I)
Risk Management. (Cited in paragraphs Summary, and 1-6d(1))
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/3-100.12/toc.htm

FM 100-14
Risk Management. (Cited in paragraphs Summary, and 1-6d(1))
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-14/default/htm

EO 12861
Elimination of One-Half of Executive Branch Internal Regulations. (Cited in paragraph History)
https://www.denix.osd.mil/denix/Public/Legislation/EO/note59.html

MCO 3500.39
Operational Risk Management. (Cited in paragraphs Summary, and 1-6d(1))
http://www.usmc.mil/directiv.nsf/mco?openview&count=5000&start=1

MCO 5100.19
Marine Corps Traffic Safety Program (Drive Safely). (Cited in paragraphs Summary, and 4-3a(1))
http://www.usmc.mil/directiv.nsf/mco?openview&count=5000&start=1

MCO 5100.29
Marine Corps Safety Program. (Cited in paragraph Summary)
http://www.usmc.mil/directiv.nsf/mco?openview&count=5000&start=1

MCO P5102.1
Marine Corps Ground Mishap Reporting. (Cited in paragraph 4-4e)
http://www.usmc.mil/directiv.nsf/mco?openview&count=5000&start=1

MCO 5110.1
Motor Vehicle Traffic and Supervision. (Cited in paragraphs Summary, and 4-3a(1))
http://www.usmc.mil/directiv.nsf/mco?openview&count=5000&start=1

OPNAVINST 3500.39
Operational Risk Management (ORM). (Cited in paragraph Summary, and 1-6d(1))
http://neds.daps.dla.mil/Directives/

OPNAVINST 5000.48
OPNAV Administrative Manual. (Cited in paragraph History; and appendix B)
http://neds.daps.dla.mil/Directives/

OPNAVINST 5102.1
Mishap Investigation and Reporting. (Cited in paragraph 4-4e)
http://neds.daps.dla.mil/Directives/

OPNAVINST 5200.25
CNO Management Control Process. (Cited in paragraph Army Performance Improvement Criteria (APIC), USAF, and Naval Performance Management)
http://neds.daps.dla.mil/Directives/

OPNAVINST 5215.17
Navy Directives Issuance System. (Cited in paragraph Distribution)
http://neds.daps.dla.mil/Directives/

OPNAVINST 13260.1
Air Readiness/Effectiveness Measuring AIREM) Program. (Cited in paragraph (Army) Management Control Process)
http://neds.daps.dla.mil/Directives/

SECNAVINST 5210.11
Standard Subject Identification Code Manual. (Cited in paragraph History)
http://neds.daps.dla.mil/Directives/

TC 21-306
Tracked Combat Vehicle Driver Training. (Cited in paragraph 4-4d(1))
http://www.adtdl.army.mil/cgi-bin/atdl.dll/tc/21-306/tc21-306.htm

Section III
Prescribed Forms. This section contains no entries.

(Section IV and subsequent text continued on next page.)

Section IV
Referenced Forms.

CFLCC Form 2850
Class E Mishap Reporting Form

DA Form 285-AB-R
U.S. Government Abbreviated Ground Accident Report (AGAR)

DA Form 348
Equipment Operator's Qualification Record (Except Aircraft)

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 2397-AB-R
Abbreviated Aviation Accident Report (AAAR)

DD Form 836
Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles

DD Form 1902
Certificate of Qualification

OF 346
U.S. Government Motor Vehicle Operator's Identification Card

SF 91
Motor Vehicle Accident Report

Section V
Websites Referenced (Other than Publications).

www.us.army.mil
Subject: Army Knowledge Online (AKO). (Cited in paragraph 4-3a(2))

cflcc3afwdsafety@swa.army.mil
Subject: Website for forward HEAT Command and Feedback Card. (Cited in appendix E)

(Appendix B and subsequent text continued on next page.)

Appendix B
HEAT Training Participant Screening Sheet/TTO & DOR Policies

HEAT TRAINING PARTICIPANT SCREENING SHEET

NAME (LAST, FIRST MI) SSN: RANK:

UNIT_____ AGE _____ DATE OF LAST PHYSICAL _____

TRAINING: INITIAL / REFRESHER MEDICAL STATUS (Profiles): _____

1. Have you been physically ill in the last two weeks?	Y N
2. Have you taken any medications in the last 24 hours?	Y N
3. Are you presently under any medical treatment or (aircrews) have you been medically grounded in the last 30 days?	Y N
4. Have you had any shots or immunizations in the past 12 hours?	Y N
5. Have you had any dental work in the past seven days?	Y N
6. Have you donated blood in the last seven days?	Y N
7. Have you had less than your normal amount of sleep in the last two nights?	Y N
8. Have you had any alcohol in the last 12 hours?	Y N
9. Have you changed your eating habits in the last 24 hours?	Y N
10. Do you have any physical condition which might be aggravated by this training?	Y N
11. Have you had any back or joint trouble in the last 30 days?	Y N
12. Have you had any head, neck, back, or any major previous bone fracture?	Y N
a. If so, have you been released for such activity by a Competent Medical Authority?	Y N
13. For women: Are you pregnant?	Y N
14. Do you have any physical condition not noted above?	Y N
15. Have you ever had a traumatic experience in vehicles and/or do you have any fear associated with being in a tactical vehicle, such as a HMMWV?	Y N
16. Is there any reason why you should not participate in training today?	Y N
17. Have you previously requested to drop from any HEAT/egress training?	Y N

Note: If you marked *yes* to any one of these questions, please provide explanation in the remarks section identifying by number the question to which reference is made.

REMARKS

If my medical status should change during this course of training, I will immediately report my status to the Lead HEAT Instructor.

_____ _____
Signature Date

DROP ON REQUEST (DOR) AND TRAINING TIME OUT (TTO) POLICY

This course is designated as a low-to-moderate training EVENT, and is voluntary. With proper controls, the risk is mitigated down to at least Moderate level. Accordingly, HEAT Training participants have the option to individually request termination of training. Any time the crewmember makes a statement such as "***I quit***", "***DOR"*** or words of that effect the crewmember **shall** be immediately removed from training environment**.**

A TTO may be called in any training situation whenever a HEAT Training participant or instructor expresses concern or personal safety or a need for clarification of procedures or requirements exists. TTO is also an appropriate means for a crewmember to obtain the relief if they are experiencing pain, heat stress or other physical discomfort.

Calling "***time out***", "***training time out***", crossing the hands in a "T", raising a clenched fist overhead, or any action that removes the HEAT Training participant from the training area such as an unscheduled or instructed egress from the device will be considered a "training time out". The crewmember may be returned to the training event following a TTO when ready to return and upon approval of the Lead HEAT Instructor.

STATEMENT OF UNDERSTANDING

I, *(Print Name)* _____**, having been thoroughly briefed on the DOR and TTO policies, do fully understand these policies and there implication.**

_____ _____
Signature Date

PRIVACY ACT STATEMENT

Under the authority of title 10 U.S.C., 1071-87 and 5031; 5 U.S.C. 301; Executive Order 9397, and the manual of the medical department, Article 4-5, information is required to screen you for training. The personal information will be used to determine the presence of any condition, which would contraindicate participation in egress training. The Social Security Number (SSN) is used only for report filing. Disclosure of requested information is voluntary to prevent illness or injury. Failure to provide the requested information may preclude participation in egress training and may warrant further medical evaluation.

This form shall be filed and maintained by the cognizant Master Driver Trainer IAW AR 25-400-2 (The Army Records Information Management System [ARIMS]), AFPD 37-1 (Information Management), AFMAN 37-123 (Management of Records), or OPNAVINST 5000.48.

TRAINING TIME OUT (TTO)/DROP ON REQUEST (DOR)

1. All HEAT Training participants shall be briefed on the "DOR" and "TTO" policy prior to the commencement of training.

2. TTO – Crewmembers or instructors who have apprehension concerning their personal safety or that of another shall request a "TTO" to clarify the situation and receive or provide additional instruction as appropriate. Students who refuse to participate in the training exercise after training time-out instruction has occurred will be removed from training. The Safety Officer (or OIC) will forward the matter to the individuals command to determine the possibilities of retraining the crewmember at a future date.

3. DOR – HEAT Training participants are enrolled on a voluntary basis; therefore, crewmembers may voluntarily request termination of training. Any time a crewmember makes a statement such as *"I quit"* or *"DOR"* they will be immediately removed from the training environment (HEAT, classroom etc.). The Safety Officer will inform individual's command of their decision to DOR. When the crewmember exercises the option to DOR as stated above, the individual's supervisor shall:

a. Counsel the HEAT Training participant on the importance of the training and ascertain the reasons behind the request.

b. Have the crewmember make a written request to terminate or continue training, which shall become a permanent part of their training folder.

c. Following a HEAT Training participant's DOR, the Safety Officer (or OIC) is the only authority that may return the crewmember to training.

d. Students who are returned to the training environment will be assisted in the program by the instructors until the crewmember's confidence level is restored or it is determine the crewmember's participation in the program is no longer warranted.

4. Student Safety – Any time a HEAT Training participant demonstrates signs of panic, fear extreme fatigue, or lack of confidence, instructors shall stop the training, identify the problem, and make a determination whether or not to continue. Instructors shall be constantly alert for any unusual behavior which may indicate a crewmember is experiencing difficulty and shall immediately take appropriate action to ensure the crewmembers' safety.

Appendix C
HEAT Pre-Mishap Plan

HEAT PRE-MISHAP PLAN

Instructions: The blank spaces are to be completed prior to undertaking any training in the HEAT, and this form ***conspicuously posted*** for ready reference in the invent of a mishap.

1. Non-HEAT related injuries.

a. All non-HEAT related injuries (injuries not associated with the device itself), will be handled at the facility and transported (ambulance _____) to the nearest clinic or treatment center, as necessary.

2. HEAT-related injury.

HEAT *impact* injuries	HEAT *non-impact* injuries
Head injuries	Vision blurriness consistent with red-out (from inversion)
Neck injuries	Chest pain or headache (consistent with cardio distress or stroke)
Back injuries	Flank or chest pain
Partial or full paralysis	Numbness/tingling in extremities
Falls from height	Dipnea (shortness of breath)
Any neurological deficit	Any cut, abrasion or bruise (not known to be from an impact)
Any cut, abrasion or bruise (known to be from an impact)	Crushing, pinching, or punctures known not to be from an impact
Strike by a falling or flying object	

a. If a HEAT-related injury is suspected:

(1) Administer first aid, and – if available – O_2 by mask.
(2) Call nearest MEDEVAC Unit (_____).
(3) Advise Commander (_____), Safety Officer (_____), and nearest attending physician (_____).

3. Specify the type and cause (i.e., impact or non-impact) when calling for emergency medical services, and reporting the mishap through the Safety Office.

4. All injuries – no matter how slight – must be reported. This assists in the development of administrative and engineering controls necessary to avoid future mishaps. All damage to the device must be reported IAW CFLCC Pam 385-95, para. 3-7.

Appendix D
Class E Mishap Reporting Form

CLASS E MISHAP REPORTING FORM

(For use in reporting non-aviation mishaps costing the Government less than $2,000, or not otherwise qualifying as a Class D mishap. Not for use in reporting Class E Army Aviation mishaps, which are required to be reported on a DA Form 2379-AB-R [Abbreviated Aviation Accident Report (AAAR)] IAW DA Pam 385-40).

SECURITY CLASSIFICATION OF FORM	

1. Date and Local Time of Mishap:
2. Location of Mishap *(address, building number and installation, grid, etc.)*:
3. Number of, and type of injuries (e.g., *"One cut finger")*, if any. If more than one injured person, list them as *"1.", "2"*, etc. Specify whether the injury is a HEAT impact or non-impact injury. If no injuries, write *"None"*.
4. Rank and name of individuals involved in the mishap. Correspond them to block 3 above (e.g., *"1. SGT Adam Burkholder; 2b. SFC Richard Wolfe"*).
5. Indicate any military or civilian equipment damaged, and describe the damage. If none, write *"None".*
6. Describe what happened, and the events that led up to the mishap. Use additional sheets of paper if necessary.
7. How do you think this mishap could have been prevented?

8a. Rank and Name of person reporting mishap:	
8b. Phone number (DSN or commercial) where you may be reached.	

DO NOT WRITE BELOW THIS LINE – FOR USE BY SAFETY OFFICE(R).

9a. Rank and Name of Safety Officer receiving and investigating mishap:	
9b. Date received:	
9c. Date Investigation completed, filed:	
9d. Cross-referenced LODs or other mishap reports (e.g., SFs 91, AGARs):	

CFLCC Form 2850 1 Sep 05 V1.0

FORM ROUTING: Unit Safety Officer review and complete form, route *through* Command Channels *to* CFLCC Safety Officer (Office symbol: AFRD-SAFETY), Camp Arifjan, Kuwait 09306.

(Appendix E and subsequent text continued on next page.)

Appendix E
HEAT Comment and Feedback Card

HEAT COMMENT AND FEEDBACK CARD

1. We would like to hear back from you in terms of how the HEAT benefited you – whether they be your impressions immediately following a training session with the device, or any practical experience you may have gained in the weeks and months following your training.

2. How did the training benefit you?

_____
_____
_____

3. What recommendations do you have to make the training better?

_____
_____
_____

4. How realistic did you find the training?

_____
_____

5. Did this training change your perceptions of what a rollover accident would be like? If so, how?

_____
_____
_____

6. Did this training change any of your habits involving operation of an Army Motor Vehicle? If so, which one(s)?

_____
_____
_____

7. The HEAT was put into place for a single purpose: **To save lives with the training it provides**. If you're returning for Intermediate, Advanced, or Recurrent training, do you know of an incident where the HEAT training paid off?

_____
_____
_____

OPTIONAL: Rank/Name _____

Unit/Organization _____

Date _____ Email: _____

Mail completed form back to: CFLCC Safety Director (AFRD-SAFETY), Camp Arifjan, Kuwait APO AE 09306; **or email** (U) to cflcc3afwdsafety@swa.army.mil.

(Appendix F and subsequent text continued on next page.)

Appendix F
Risk Management Worksheet

RISK MANAGEMENT WORKSHEET
(The proponent of this form is USAF Aviation Safety Office)

Page 1 of 5 Pages

1. MISSION/TASK: Conduct HMMWV Egress Assistance Trainer (HEAT) driver Operations

2. BEGIN DTG: 27 December 2005 0001
END DTG: Indeterminate

3. DATE PREPARED: 21 December 2005

4. PREPARED BY (Rank, Last Name, Duty Pos): CWS Gmpin, ASO (Reviewed/updated 11 February 06)

5. SUBTASKS AND HAZARDS	6. INITIAL RISK ASSESSMENT CODE (RAC)	7. CONTROLS	8. RESIDUAL RISK ASSESSMENT CODE (RAC)	10. HOW IMPLEMENTED	11. WHO/HOW SUPERVISED	14. CONTROL RECORD
I. SUBTASK: Travel to/from HEATS.						
A. Wheeled vehicle operations to/from billeting	MOD	AMV, ACV guidance.	LOW	a. Comply with CFLCC Pam 385-95 and CFLCC Inst 385-608.	CFLCC Safety Director maintain CFLCC Pam 385-95, CFLCC Inst 385-608, and message guidance on use of AMVs and ACVs.
1. Unlicensed drivers.	MOD	ibid.	LOW	Ensure only licensed operators drive AMVs or ACVs.	Supervisors and vehicle dispatchers verify licensure.
2. Lost drivers.	MOD	ibid.	LOW	Provide strip maps.	Supervisors and convoy commanders provide strip maps.
3. Collisions, rollovers.	MOD	ibid.	LOW	Direct following distances, obey posted speed limits, and brief pre-accident plan.	Vehicle commanders review and brief route. Safety Officers and Operations Officers review and brief convoy ops and pre-accident plan.
4. Adverse weather.	MOD	ibid.	LOW	Secure weather brief, and relay to drivers/ commanders so they may adjust the operation.	Vehicle dispatchers secure weather brief from S-2 or S-3.
II. SUBTASK: Administrative tasks involved in HEAT academic training.		**UNCLASSIFIED**				

(Risk Management Worksheet continued on next page.)

9. MISSION/TASK RISK AFTER CONTROLS ARE IMPLEMENTED: LOW ☐ MODERATE ☒ HIGH ☐ EXTREMELY HIGH ☐

12. DATE APPROVED: 9 Jan 06

13. COMMAND APPROVING AUTHORITY
(S/)
LTC CHARLES A. CLAYTON, CFLCC Safety Director

63RD GROUP FORM 4162 (REV), 1 APRIL 95

RISK MANAGEMENT WORKSHEET - CONTINUATION					Page 2 of 5 Pages	
1. MISSION/TASK: Conduct HMMWV Egress Assistance Trainer (HEAT) device Operations.						
5. HAZARDS	6. INITIAL RISK WITH SEVERITY AND PROBABILITY	7. CONTROLS	8. RESIDUAL RISK WITH SEVERITY AND PROBABILITY	10. HOW IMPLEMENTED	11. WHO/HOW SUPERVISED	12. CONTROLS EFFECTIVE
A. Trip and fall in bleachers and on HEAT device floor.	MOD	Provide clean and dry seating.	LOW	Walking/working surfaces clean and IAW 29 CFR 1910.	Lead HEAT academic instructor verify all walking and working surfaces are cleaned after each spill, and prior to undergoing training.	
	MOD	Clean spills, dry and sweep floor surface.	LOW	As above.	ibid.	
	MOD	Provide adequate lighting.	LOW	Verify lighting appropriate before beginning instruction, report any burned-out lights on work order.	Same as for IIA above, except WRT lighting per DA Pam 40-501.	
B. Electrocution and other hazards associated with projectors, PA systems, etc.	HIGH	Verify proper use of plugs and appliances, provide spare bulbs for projectors.	MOD	Preflight hangar and classroom space for UL and NEC compliance.	Same as for IIA above except WRT UL and NEC criteria.	
III. SUBTASK: Training tasks in the HEAT device.						
A. Scrapes and minor cuts from ingress and egressing device.	MOD	File and grind all sharp edges in device during manufacture.	LOW	Reverse engineer areas of special attention required by manufacturer(s).	Improve design through user and manufacturer inputs. Compare rounded and smooth edges with aircraft devices and HMMWV cabs.	
	MOD	Engineer padding into device.	LOW	Apply RM, and design padding into device.	ibid.	
B. Falls from device.	HIGH	Seatbelts, door locks and latches.	MOD	Installation of seatbelts IAW AR 385-55.	Lead HEAT Instructor verify installation and serviceability of seatbelts/restraints	

(Risk Management Worksheet continued on next page.)

RISK MANAGEMENT WORKSHEET - CONTINUATION

Page 3 of 3 Pages

1. MISSION/TASK: Conduct HMMWV Egress Assistance Trainer (HEAT) device Operations.

5. HAZARDS	6. INITIAL RISK (WITH SEVERITY AND PROBABILITY)	7. CONTROLS	8. RESIDUAL RISK (WITH SEVERITY AND PROBABILITY)	10. HOW IMPLEMENTED	11. WHO/HOW SUPERVISED	14 CONTROLS EFFECTIVE
					IAW Federal Motor Vehicle Safety Standards.	
	MOD	Padding beneath device.	LOW	Sufficient rubberized padding beneath and around device.	Lead HEAT instructor direct installation of thicker matting beneath device, and padding wide enough to surround device.	
C. Injuries from flailing.	HIGH	Kevlar/cranial protection.	MOD	Prescribe head protection in the POI.	Cranial protection directed in HEAT POI by HEAT project director IAW ANSI Z89.1 and CFLCC Pam 385-95.	
	MOD	PPCE.	LOW	Prescribe PPCE in the POI.	HEAT project director and CFLCC Safety Director prescribe PPCE in HEAT POI IAW AR 385-10 and 29 CFR 1910.	
			LOW	Verify PPCE worn during HEAT device use.	HEAT Lead Instructor verify PPCE worn.	
			MOD	Bracing maneuvers.	Same as for HIC, except for bracing instructions.	
D. Catastrophic failure of pivot mechanism in HEAT device.	HIGH	Design and maintenance criteria for pivot device.	LOW	Hardening of device pivot shaft.	Enhanced pivot shaft by design, thickness of shaft wall.	
			LOW	Upgrading of shaft bearings and hanger assemblies.	ibid, but for bearings.	

(Risk Management Worksheet continued on next page.)

63rd GROUP FORM 4162 (REV), 1 APRIL 05

RISK MANAGEMENT WORKSHEET - CONTINUATION					Page 4 of 5 Pages	
1. MISSION/TASK: Conduct HMMWV Egress Assistance Trainer (HEAT) device Operations.						
5. HAZARDS	6. INITIAL RISK WITH SEVERITY AND PROBABILITY	7. CONTROLS	8. RESIDUAL RISK WITH SEVERITY AND PROBABILITY	10. HOW IMPLEMENTED	11. WHO/HOW SUPERVISED	14.CONTROLS EFFECTIVE
			LOW	Prescription of bearing/race criteria.	Daily inspections of shaft, bearings and assemblies prescribed by the HEAT project director in the HEAT POI; preflighting by the HEAT lead instructor prior to each training day.	
E. Entanglement in, or striking by the device of those not undergoing training in the device.	HIGH	Specify safe areas around device.	MOD	Design safe areas around device.	HEAT project director specify safe area(s) in HEAT POI consistent with brake or drop hammer machines of similar size/footprint.	

Note: Acronyms, abbreviations, initialisms and related references per AR 385-95, AR 95-1, FM 3-100.12 and similar publications.

		PROBABILITY				
RISK ASSESSMENT MATRIX		FREQUENT	LIKELY	OCCASIONAL	SELDOM	UNLIKELY
		A	B	C	D	E
CATASTROPHIC	1	EXTREMELY HIGH				M
CRITICAL	2		HIGH		M	
MODERATE	3	H	MODERATE			
NEGLIGIBLE	4	M		Low		

(Risk Management Worksheet continued on next page.)

RISE MANAGEMENT WORKSHEET - CONTINUATION

Page 4 of 5 Pages

1. MISSION/TASK: Conduct HMMWV Egress Assistance Trainer (HEAT) device Operations

Aft view of the device, including the rotational apparatus for the HEAT, with the L/H (passenger side) platforming lowered. The cab pivots around the long axis of this former diesel engine maintenance stand.

Trailer-mounted view of HEAT device cab – a HMMWV cab taken from a DRMO'd HMMWV. Reverse engineering will preclude injuries from sharp surfaces inside the device, and platforming will prevent falls from device while entering or exiting.

63rd GROUP FORM 4162 (REV), 1 APRIL 05

(Appendix G and subsequent text continued on next page.)

Appendix G
PMCS Checklist

PMCS CHECKLIST

Daily, Before each use

Check or Service	√ Complete
Check electric rotator motor and rotation mechanism – hold-down bolts are tight.	
Check (two each) set screws that hold the woodruff key on the motor are tight; check slippage marks.	
Check motor base freeplay.	
Check motor shaft wear.	
Check drive sprocket for abnormal wear.	
Check rotator gearbox and pivot points – condition and security.	
Check mechanism base freeplay	
Check no rotational freeplay in the rotator shaft.	
Check front rotisserie plate bolts tight, and no freeplay.	
Check rotation lock (pin) functions properly and is secure.	
Check rear rotisseries plate bolts tight and no freeplay.	
Check for any lengthening of bolt heads or elongation of holes, sheared bolt heads or missing bolts, cracking welds, stretching metal or other signs of metal fatigue.	
Troop platform – check ladders and ladder brackets for broken brackets, cracking welds.	
Check troop platform cage for separations, sharp edges or areas where fingers could become trapped or twisted.	
Availability of motion discomfort bucket(s).	
Check support brackets and bracket mounts for cracks, and secure fitting.	
Troop platform lifting winch – ensure winch is operating properly.	
Check connection points to troop platforms.	
Check winch hold-down bolts for wear or looseness.	
HEAT base – check for any lengthening of bolt holes and heads, sheared bolt heads or missing bolts, cracking welds, stretching metal or other signs of metal fatigue.	
HEAT cab (exterior) – check door handles function properly.	
HEAT cab (interior) – check seatbelts present, operational, and free of fraying.	
Seat pads serviceable and properly installed.	
Steering wheel has no side-to-side freeplay.	
Gunner lanyard*/harness – check for installation, security, cleanliness, no fraying, and surety of latch, clasp or carabiner.	
Interior clean and free of loose objects and dirt or dust that could cause eye injury.	
Door lock mechanisms fully functional and lock properly.	
Combat door locks lock and unlock freely.	
Padding for interior mock-up of communications devices not torn.	
Interior mock-ups are securely mounted and have no freeplay.	
Mock (Styrofoam) coolers, ammo cans, etc., for proper placement and condition.	
Interior cab padding (walls and ceiling) is securely fastened and not torn.	
Windows are in the up position and locked.	
Check for any sharp edges on all surfaces within the cab.	
Availability of motion discomfort bags.	
General – check availability of POI.	
Check placement of safety zone (30” and 36”) markings on floor around device.	
Verify placement of padding at least 6” thick, or a safety/suspension web beneath the device. Padding/webbing must be installed so as to effectively arrest any fall from the cab of the device.	
Check availability of serviceable fire extinguisher, and hangar/building is generally safe for device use.	
Verify the device has been properly grounded IAW TC 11-6.	
Check generator fuel, oil, and coolant fluid levels; and general serviceability of the generator.	
Complete the blank spaces in the HEAT Pre-Mishap plan (appendix C) and ensure it is posted in a conspicuous location for immediate reference.	

*1,000 lb.-test lanyard (preferred).

Daily, During each use

Check or Service	√ Complete
Check the rotator electric motor for any signs of motor overheating.	
HEAT cab (interior) – check door lock mechanisms fully functional and lock properly.	
Combat door locks lock and unlock freely.	
Any signs of motion discomfort or other fluid excretion.	

Daily, After each use

Check or Service	√ Complete
Check electric rotator motor and rotation mechanism – check drive sprocket for abnormal wear.	
Check motor base freeplay.	
Check (two each) set screws on that hold the woodruff key on the motor are tight; check slippage marks.	
Check the rotator gear box lubricant level (remove access plate).	
Empty motion discomfort bags, bucket(s) as necessary. Clean and wipe down interior after evidence of discomfort.	

Weekly

Check or Service	√ Complete
Change rotator mechanism gearbox fluid (80W-90).	
Lubricate –	
Front rotator mechanism (80W-90).	
Rear rotisserie (axle grease – inject grease until excretion is evident).	
Troop platform pivot points (light lubricant spray).	
The rear rotisserie zerk fitting.	
Training platform pivot points (light lubricant spray).	
HEAT base training platform pivot points (light lubricant spray).	
Combat lock mechanisms.	
Check the rotator gearbox and pivot points (remove access plate).	
Check electrical connections, cables, etc., from electrical source (battery or wall plug) to electric rotator motor – condition and security.	
Check battery for service level, terminals for evidence of corrosion.	
Vacuum and wipe down interior (HEAT cab).	
Clean glass windows.	

Monthly

Check or Service	√ Complete
Lubricate –	
All door hinges (light lubricant spray).	
Door locks (light lubricant spray).	
Combat locks (light lubricant spray).	
Seatbelt mechanisms (graphite or other light lubricant spray).	
Service generator IAW applicable TM, Technical Order, Lube Order, etc.	

Quarterly

Check or Service	√ Complete
Wire brush worn and rusted spots – apply touch-up paint as necessary.	
Service generator IAW applicable TM, Technical Order, Lube Order, etc.	

(Appendix G continued on next page.)

Annually

Check or Service	√ Complete
Examine rotator mechanism electric motor brushes and armature – replace as necessary.	
Service generator IAW applicable TM, Technical Order, Lube Order, etc.	

(Appendix H and subsequent text continued on next page.)

Appendix H
HEAT Written Examination

HEAT TEST #1

1. An M1114, with a normal center of gravity (cg) and normal load, can operate on slopes of up to:
a. 20 degrees.
b. 25 degrees.
c. 30 degrees.
d. 98.6 degrees.

2. The critical (rollover) angle for an up-armored HMMWV is:
a. 20 degrees.
b. 25 degrees.
c. 30 degrees.
d. 98.6 degrees.

3. The corrective action before reaching the critical rollover angle is:
a. Jerk the wheel back to the center of the road.
b. All occupants yell, "Water!"
c. Gradually reduce speed and ease the vehicle back onto the roadway at a safe speed.
d. Secure the coolers and secure voice radios.

4. During egress, you find the door you're attempting to exit won't open. You should:
a. Inflate your water wings, kick out the windshield, and swim away from the enemy.
b. Don't panic - find a door that works.
c. Stay put and call the Auto club.
d. Stay put and call QRF on the secure voice radio.

5. What is the PPE requirement for driving an Army tactical vehicle?
a. Kevlar and full body armor – even if only going to the PX.
b. Kevlar and other armor as directed during the mission brief.
c. BDUs and PT shoes.
d. None. PPE interferes with egress from the HMMWV.

6. What are the egress actions for the Gunner following a rollover on dry land?
a. Disconnect headset, assess injuries, clear and check weapon, exit vehicle with weapon.
b. Assist crew to exit, establish security, recover sensitive items, provide first aid, assist in vehicle recovery.
c. a and b above.
d. None of the above. Leap from the vehicle before it rolls.

7. What are the immediate actions of the Driver should an entry into the water be imminent?
a. Release the accelerator; yell *"Water!"*; and keep hands on the steering wheel.
b. Tuck head and chin into chest and brace for impact; and steer vehicle to control entry into the water to prevent rollover.
c. a and b above.
d. None of the above. Leap from the vehicle before it hits the water.

(Examination continued on next page.)

8. Prior to releasing your seatbelt for egress, and immediately afterward, you must:

a. Brace with one hand against what was the ceiling (consider which hand you should brace with) – your neck cannot support your body weight during a fall; unfasten your seatbelt with the other hand.
b. Unfasten your seatbelt with the other hand, pushing firmly until it pops loose. You may have to push against the floor with your bracing hand to allow the seatbelt to unfasten.
c. a and b above.
d. None of the above. Take out your k-bar and cut the thing off.

9. How much does the HMMWV armored door weigh?

a. 3,175 kg.
b. 2,300 lbs.
c. 25º.
d. 240 lbs./109 kg.

10. What is the purpose of the combat door lock?

a. To prevent aggressors from entering the vehicle in a hostile area.
b. It interfaces with the Lojack circuitry, and assists police in recovery of a stolen HMMWV.
c. It jettisons the door if moisture is detected during a water entry.
d. There is no difference between a combat door lock and a conventional door lock.

11. When operating near bodies of water or crossing bridges, the HMMWV crew should:

a. Inform crewmembers of the water hazard, loosen seatbelts, slow down.
b. Identify water hazards, unlock combat locks, remove seatbelts, slow down.
c. Slow down, inform crewmembers of possible water hazards, unlock combat locks (enemy situation permitting).
d. Look for alternate routes.

12. To reduce the risk of being involved in a rollover, HMMWV crews should:

a. Check tires for proper inflation and serviceability, and slow down.
b. Slow down, don't overload the vehicle, check condition and serviceability of tires, secure loads.
c. Ensure operators are properly licensed.
d. Limit crews operating in the vehicle to four or less.

13. What can gunners do to minimize their injuries when involved in a rollover?

a. Try to jump away from the vehicle.
b. Lower yourself and brace for impact.
c. Yell *"Rollover!"* while lowering yourself into the vehicle, bracing for impact.
d. Call the Automobile Club and complain about that last sharp curve in the road.

14. What preventive measures can be taken to minimize the chances of being involved in a rollover?

a. Make a detailed Power Point presentation of any sharp curve in the road for emailing to your Congressman in a formal yet anonymous complaint.
b. License and certify all crews on the HEAT, and train as a team.
c. Slow down, avoid panic, know proper vehicle maneuvering, use caution in rural areas with soft shoulders, and identify water hazards.
d. None of the above – only tracking your number of days left in country will help.

15. Other than the driver and gunner, what are the duties of the crew in the event of a rollover?

a. Yell *"Rollover!"*
b. Grab the gunner and pull them into the crew compartment.
c. Brace for impact.
d. All of the above.

(End of written examination.)

HEAT TEST#1

ANSWER KEY

1. c
2. b
3. c
4. b
5. b
6. c
7. c
8. c
9. d
10. a
11. c
12. b
13. c
14. c
15. d

(Appendix I and subsequent text continued on next page.)

Appendix I
Set-Up Procedures for the HEAT

SET-UP PROCEDURES FOR THE HEAT	*Date:*	

Procedure/Step	√ Complete	√ Verified
1. Drive HEAT prime mover to the desired location.		
a. Chock trailer wheels.		
b. Install support blocks.		
2. Disconnect the trailer from the prime mover.		
a. Lower the front of the trailer onto the support blocks.		
3. Install steps are the rear of the trailer/front of the HEAT.		
4. Inspect the winch cable, cable clamp(s), pulleys and troop platform attachment bolt(s) for any damage. **Note**: If any damage is found, do not attempt to raise the troop platform.		
5. Winch one of the two platforms to the horizontal position.		
a. Insert the long end of the support bar into the front-most bracket (furthest from the winch) on the troop stand; insert the short end of the support bar into the bracket on the base. **Note**: Do not allow anyone under the troop platform until the first support bar is in place.		
b. Lower the platform slightly using the winch and insert the long end of another support bar into the middle bracket on the troop stand. If the troop stand needs to be raised or lowered slightly to accomplish this, use the winch.		
c. Repeat the process from 5b above with the third support bar at the (rear) brackets nearest the winch.		
d. Once all three support bars are in place, lower the winch to take the tension off the cable. If the support bars are not firmly seated, tap them with a rubber mallet to seat them completely.		
6. Repeat step 5 and sub-steps for the opposite-side troop stand.		
7. Install the steps from the trailer to the HEAT front platform.		
8. Remove the three safety pins from the base hinges on the side rail and raise the side rail to the horizontal position.		
a. Re-pin the side rail, ensuring the safety pin ball catches are properly free of the hinge, and the pins are locked.		
9. Repeat step 8 and sub-steps for the opposite side rails.		
10. Install the troop platform front rails.		
11. Install the troop platform rear chains.		
12. Remove the four travel braces from under the corners of the HEAT.		
13. Install floor Safety Zone tape stripes (30” – 36”).		
14. Plug device into electrical source and secure cord to prevent trip hazard as required.		
a. Ground device IAW TC 11-6.		
15. Secure serviceable fire extinguisher(s), and ensure remainder of hangar/building is safe for device use.		
16. Fill in the blank spaces in the HEAT Pre-Mishap plan in appendix C of this TC, and post in a conspicuous location for immediate reference.		
a. Photocopy sufficient copies of the CFLCC Class E Mishap Form (appendix D of this TC), and maintain them in a common area for ready access.		
17. Conduct PMCS following the steps in appendix G of this TC.		

(Appendix J and subsequent text continued on next page.)

Appendix J
Sample Certification of Completion of Training Memorandum

DEPARTMENT OF THE ARMY
1101ST AVIATION CLASSIFICATION AND REPAIR ACTIVITY DEPOT
ADAMS ARMY AIRFIELD, KENTUCKY 40601-2221

REPLY TO
ATTENTION OF

1101–CDR (385-55f4) 10 February 2006

MEMORANDUM FOR CFLCC C-3 HEAT MASTER DRIVER TRAINER

SUBJECT: (U) Certification of Completion of HEAT Academics Training and Testing

1. During the mobilization training of this AVCRAD, all wheeled vehicle operators were satisfactorily trained in HMMWV Egress Assistance Trainer (HEAT) academics, IAW CFLCC TC 21-305-4.1, para. 4-3. This training was conducted to the HEAT Program of Instruction (POI), dated 26 January 2006, as forwarded by CW5 Dean E. Stoops shortly after our mobilization. Each attendee of this training successfully passed a written examination, as required in CFLCC TC 21-305-4.1, appendix H; and the 1101ST AVCRAD Master Driver Trainer has endorsed each Driver's OF 346 with *"HEAT Academics Complete"* (or similar entry).

2. A record of completion of this academic block of instruction and successful completion of the written examination has also been noted on each Driver's DA Form 348, which satisfies the prerequisite to attend the hands-on training in the HEAT. A copy of these records will be brought with our Master Driver Trainer during our transit of the Udairi Training Complex into the theater of operation, and will be available for your review upon request.

3. POC for this certification is the undersigned at DSN 312 204-1110; or the 1101ST AVCRAD Master Driver Trainer, CSM Merritt L. C. Whitelow IV, at DSN 312 204-2221.

//s//
EVA M. ROBERTS
COL, AV
Commanding

DISTRIBUTION:
CFLCC C-3 HEAT Master Driver Trainer
1101ST AVCRAD Master Driver Trainer
file

Sample Certifying Memo

UNCLASSIFIED

(Glossary and subsequent text continued on next page.)

GLOSSARY

Section I
Abbreviations (including Acronyms and Initialisms).

°
degree

A-1
Personnel Office(r)

AAAR
Abbreviated Aviation Accident Report

AAF
Army Airfield

AAR
After Action Review

ACH
Advanced Combat Helmet

AF
Air Force

AFI
Air Force Instruction

AFMAN
Air Force Manual

AFOSH
Air Force Occupational and Environmental Safety, Fire Protection, and Health

AFOSHSTD
Air Force Occupational and Environmental Safety, Fire Protection, and Health Standard(s)

AFPAM
Air Force Pamphlet

AFPD
Air Force Policy Directive

AFTTP
Air Force Tactics, Techniques and Procedures

AGAR
Abbreviated Ground Accident Report

AIREM
Air Readiness/Effectiveness Measuring

AKO
Army Knowledge Online

AOR
Area of Responsibility

APIC
Army Performance Improvement Criteria

AR
Army Regulation

ARIMS
Army Records Information Management System

ASG
Area Support Group

BDU
Battle Dress Uniform

C^2
Command Cell

C-3
Operations Office(r)

CFLCC
Coalition Forces Land Component Command

CFR
Code of Federal Regulations

CG
Commanding General
– or –
center of gravity

CLS
Combat Lifesaver

CNO
Chief of Naval Operations

CPR
Cardiopulmonary Resuscitation

DA
Department of the Army

DA Pam
Department of the Army Pamphlet

DCG
Deputy Commanding General

DD
Department of Defense

DoD
Department of Defense

DODI
Department of Defense Instruction

DON
Department of the Navy

DOR
Drop on Request

DSN
Digital (or Defense) Switching Network

e.g.,
Latin – exempla gratia (example given)

EO
Executive Order

ESOH
Environmental, Safety and Occupational Health

etc.
etcetera

FM
Field Manual

GTA
Graphic Training Aid

HAZMAT
Hazardous Material

HMMWV
High Mobility Multipurpose Wheeled Vehicle

(I)
Interservice
– or –
Instruction

IAW
in accordance with

i.e.,
Latin – id est (that is)

IED
Improved Explosive Device

INST
Instruction

IP
Interservice Publication

kg
kilogram

kw
kilowatt

lb
pound

LBE
Load Bearing Equipment

LOD
Line of Duty

MCO
Marine Corps Order

METL
Mission Essential Task List

MTOE
Modified Table of Organization and Equipment

NCO
Noncommissioned Officer

NCOIC
Noncommissioned Officer in Charge

O_2
Oxygen

OCIE
Organizational Clothing and Initial Issue Equipment

OF
Optional Form

OIC
Officer in Charge

OIF
Operation Iraqi Freedom

OPCON
Operational Control

OPNAV
Office of the Chief of Naval Operations

OPNAVINST
OPNAV Instruction

OPR
Office of Primary Responsibility

ORM
Operational Risk Management

OSH
Occupational Safety and Health

OTR
over-the-road

Pam
Pamphlet

para.
paragraph

PMCS
Preventive Maintenance Check Services

POI
Program of Instruction

PPE
Personal Protective Equipment

PT
Physical Training

PX
Post Exchange

QRF
Quick Reaction Force

RSOI
Reception, Staging, and Onward Integration

S-1
Personnel Office(r)

S-3
Operations Office(r)

SECNAV
Secretary of the Navy

SECNAVINST
Secretary of the Navy Instruction

SF
Standard Form

SOH
Safety and Occupational Health

SSN
Social Security Number

TC
Training Circular

TDA
Table of Distribution and Allowances

TLO
Terminal Learning Objective

TM
Technical Manual

TTO
Training Time Out

TTPs
Tactics, Techniques and Procedures

U
Unclassified

UAAF
Udairi (Kuwait) Army Airfield

UIC
Unit Identification Code

US
United States

USAF
US Air Force

U.S.C.
United States Code

USMC
US Marine Corps

USN
US Navy

V
Volume

VC
Vehicle Commander

VOL
volume

Section II
Terms

Abate
To eliminate or reduce an OSH hazard by complying with OSH standards criteria or taking equivalent protective measures. (Reference AR 385-10)

Commander
For purposes of this TC, the term *Commander* denotes the individual responsible for the personnel and equipment of a military Unit or Facility. Term synonymous with *Reporting Custodian*.

Countermeasure
A control developed in the Risk Management process to reduce an assessed hazard. Although a countermeasure may be emplaced prior to undertaking the activity, it may also be developed as a response to a present-and-contributing (or noncontributing) factor in an accident investigation. (Also see *Promeasure*.) This term is synonymous with *Corrective Action*.

Dotted-line relationship
An indirect line of responsibility, authority and accountability of personnel in similar disciplines or functions, between organizational hierarchies. For instance, the Safety Officer of a Company serves as a dotted-line subordinate to the Safety Officer of a Battalion under which that Company is assigned, attached, or OPCON'd. Although the Battalion Safety Officer, in this example, does not serve in the rating scheme of the Company Safety Officer (which would fall under a "*direct-line*" or a "*solid-line*" relationship), the performance and effectiveness of each Safety Officer is based in part on the performance and effectiveness of the other.

Hazard
Any actual or potential condition that can cause injury, illness, or death of personnel, damage to, or loss of, equipment, property, or mission degradation. (AR 385-10)

Incident
Is an Aircraft Class E or F occurrence (mishap) meeting the reporting requirements (as) defined in AR 385-40.

Master Driver Trainer
For purposes of this TC, an Instructor who has been qualified and certified IAW AR 600-55, para. 4-2; and who is technically proficient in the equipment they are licensed to operate, and qualify others to the degree they are able to effectively convey subject material to the user-level. Their instructional ability should be sufficient to yield trained trainers, giving each training participant the ability to fully grasp and apply these concepts to the equipment they are to operate, in each of the environments and conditions it is to be operated.

Mishap
For purposes of this TC, and with the exceptions of differentiating defined accident reporting criteria IAW AR 385-40 and Air Force Manuals (AFMANs) 91-221 (Weapons Safety Investigations and Reports), 91-223 (Aviation Safety Investigations and Reports), and 91-224 (Ground Safety Investigations and Reports), the terms *Mishap*, *Accident*, and *Incident* are synonymous in terms of being unplanned events that result in damage to property or harm to individuals.

Mission
Flight or series of flights (sorties) – or Ground Vehicle Operation – conducted to accomplish a specific task or series of tasks in support of the approved mission statement of the Unit/Facility. Each mission is assigned to a designated OIC/NOIC. (Reference AR 385-95)

(Glossary – Section II and subsequent text continued on next page.)

Mission Assurance
For purposes of this TC, the focus of an effective Safety program. In the simplest of terms, those measures taken or emplaced to guarantee – to the extent possible or practical – that the goals and objectives (near-, intermediate-, and long-term) of the organization may be realized as a component of and for the National Interest.

Officer
For purposes of this TC and unless otherwise specified, a Service Member in the rank of Corporal E-4 or higher.

Operations Officer
For purposes of this TC, the Unit/Facility Officer principally responsible for administration of the Operations function.

Organization
For purposes of this TC, a Unit, Facility or other like activity traceable to a UIC.

Program of Instruction (POI)
For purposes of this TC, a generic term for a briefing or training lesson plan. It may vary in complexity from simple bulleted concepts to be covered on a single sheet of paper, to a formal broadcast-quality script covering dozens of pages. The complexity and length of a POI depends upon the time available for the presentation, the material to be covered, the projection medium (e.g., Power Point projector), and the capabilities of the presenter/briefer. There is no set formula implied for length of presentation/briefing and complexity/depth of POI.

Risk
Chance of hazard or bad consequence. The probability of exposure to chance of injury or loss from a hazard. Risk level is expressed in terms of hazard probability and severity. (Reference AR 385-10)

Risk Assessment
Steps one and two of the Army's Risk Management Process – identification and assessment of potential loss in terms of hazards. An identified hazard is assessed to determine the risk (both the probability of occurrence and resulting severity) of an incident due to the presence of the hazard. (Reference AR 385-10)

Risk Management
The process of identifying, assessing, and controlling risk arising from operational factors and making decisions that balance risk cost with mission benefits. (Reference AR 385-10)

Rotisserie
For purposes of this TC, a general description of the longitudinal axis of the HEAT, including the rotator gear box and electrical motor on one end of the device, and the supporting bearing assembly and mounting hardware on the other.

Safety Briefing
For purposes of this TC, a targeted presentation of a safety-related subject, intended to be presented in a timely fashion to as wide an audience as practicable of Unit/Facility personnel. As the term implies, these presentations are differentiated from Safety Training by their informality and brevity.

Severity
The expected consequence of an event (hazardous incident) in terms of degree of injury, property damage, or other mission impairing factors (loss of combat power, etc.) that could occur. (Reference AR 385-10)

Unit
For purposes of this TC, unless otherwise indicated, a (typically MTOE) military organization, Detachment or higher, but subordinate to the CFLCC.

(Glossary – Section III and subsequent text continued on next page.)

Section III
Special Abbreviations (including Acronyms and Initialisms) and Terms

HEAT
HMMWV Egress Assistance Trainer

HEAT Examiner
For purposes of this TC, a Master Driver Trainer, experienced (driver) instructor, or Safety Officer/NCO designated by the Commander, and qualified IAW paragraph 3-13 of this TC to qualify/re-qualify HEAT Operators.

(Index and subsequent pamphlet text continued on next page.)

Index. This index is organized alphabetically by key words, and identified by page number.

Note: Indices in publications prepared to a DA standard typically cite paragraph numbers – rather than page numbers. Page number citation, though, seems to expedite the research process – particularly with the amount of sub-paragraphing that tends to be used throughout documents of this size. Three pointers are offered when researching a subject: 1) Use the page number cited in this index as a *"center of mass"* – plus or minus a page; 2) if possible, use a word search program in an electronic version of this TC, with as loose a logic train as possible (e.g., when researching *"HEAT"*, also consider looking under *"device"*, *"simulator"*); and those other synonyms for personnel performing the Aviation Safety function; in addition to adverbs or conjugations of a verb (for instance, *"abatement"*, when looking for *"abate"*); and 3) be sure to read the item being researched in its proper context – you may find several cross-references within the text that would be required or related reading (for instance, the initialism(s) *"CG"* may imply a *"Commanding General"* or a *"center of gravity"*).

(End of TC text. Space reserved for individual Notes on next page – the inside of back document cover.)

NOTES PAGE


COALITION FORCES LAND COMPONENT COMMAND
Third Army
Always First


CFLCC
WE WILL NOT FALTER
WE WILL NOT FAIL
PATTON'S OWN